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USSR Report

MILITARY AFFAIRS

No. 1808

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ARMED FORCES

SERGEANTS GIVEN GREATER CONTROL IN TRAINING EXERCISES

Moscow ZNAMENOSETS in Russian No 7, Jul 83 (signed to press 24 Jun 83) p 12

[Article by Guards Jr Sgt N. Zhalybin, deputy commander of a machine-gun platoon, Order of Lenin Moscow Military District: "The Sergeant Has Taken Over the Platoon--Tactical Fire Training"]

[Text] When the fighting shifted to the defensive depth, the "enemy" attempted to halt the offensive with a counterattack from a well fortified line. Events now depended upon how rapidly and correctly the attackers reacted to the altered situation. The exercise director complicated it by issuing the order:

"Commanders of 1st and 3rd platoons have been put out of action"!

Guards Sergeant S. Ovodkov, deputy commander of the 1st platoon, confidently assumed command of the platoon. He ordered the dismounted sections to rush to a hilly area, occupy positions in natural shelters and fight off an "enemy" counterattack. He focused most of the weapons on a group of targets designating moving tanks and infantry. The gunner-and-grenade thrower, the machine-gunner and sniper were assigned individual tasks of covering the intervals and supporting a firing effort by adjacent forces on the right. The effective employment of TOE and attached weapons permitted the platoon, together with adjacent forces, to beat off the "enemy" counterattack and renew the offensive.

And how did Guards Sergeant S. Mikhaylov, who replaced the commander of the 3rd platoon, perform? Unfortunately, he did not perform very vigorously. He was unable to properly assess the situation and had the motorized riflemen dismount, when the maneuver should have been carried out in the combat vehicles. The situation was corrected to some degree only when the company commander intervened, but time had been lost.

Guards Junior Sergeant S. Samulenkov, whom the hypothetical situation had made a deputy platoon commander, was also unable to handle his new duties. Essentially, he continued to direct only his own crew.

Why is it that one sergeant performs well the duties of a position one level higher than his own, while the others do it poorly? They all three graduated from a training subunit at the same time, after all, and skilfully command their sections. Each of them has taken the place of an officer absent for some reason, and frequently for an extensive period of time.

I believe that one of the causes is to be found in the sergeants' attitude toward the independent work, toward the extension of their horizons. How does Guards Sergeant Ovodkov differ from the others? Primarily, in his desire for personal professional growth.

"If I am trusted to replace the platoon commander," he says, "I must be able to perform all his duties, including his duties as exercise director."

We underscore the part about "as exercise director." Not simply command the platoon in the formations and movements, as some of the sergeants believe, but take the personnel through the planned subjects covered by the platoon's program. Naturally, this requires more than just a commander's training, which includes general matters of directing the platoon in various types of combat. Systematic and thorough independent work is needed.

Guards Sergeant Ovodkov has accumulated some instructive experience in this area.

The schedule called for a tactical drill exercise for a "Platoon in an Offensive." The officer was absent. Guards Senior Lieutenant V. Yeshchenko, a company commander, proposed that he himself replace the officer, but the sergeant volunteered to conduct the exercise on his own and was given the "go-ahead" to do so. The senior lieutenant helped him to compile a plan, to compose a diagram of the tactical situation and to plan the sequence of operations for the motorized riflemen. The preparations were based on the sergeant's independent work, however. He thoroughly studied the section "The Platoon in an Offensive" in the field manual, the appropriate combat norms, the control signals and the organization and tactics of a likely enemy's operations. He also refreshed his memory with respect to fire preparation, protection against weapons of mass destruction and military topography.

He had to do a good deal of work, but he performed with confidence in the tactical drill exercise and skilfully trained his subordinates in modern combat operations. Incidentally, Ovodkov does not limit himself to the section's operations in any exercise in the field, but also attempts to assess the situation with awareness (as though he were the platoon commander) and to distribute the personnel and equipment for the successful fulfillment of the mission assigned to the subunit. It is not surprising that in the group exercises conducted as part of the commander's training he handles assignments for organizing combat on the platoon scale more rapidly and with better tactical competence than the others.

Guards Sergeant Ovodkov's example forced me as deputy commander of a machine-gun platoon to take a new look at the importance of independent training for perfecting the knowledge and the skills required to perform the duties involved in a position one level higher than one's own. At the platoon commander's advice I began to thoroughly study the characteristics and the specific nature of a subunit's combat operations. And matters began to improve. In the tactical exercises I began to arrange the weapons in the combat formations more competently, to select the most efficient means of accomplishing the missions and to demonstrate initiative. In short, I have been mastering the platoon commander's function in various types of combat.

All of the sergeants now understand that independent training is necessary for combat and are devoting more time to it. Junior commanders replaced the officers more than once in the Great Patriotic War, after all. We do not need to go far to find examples of this. Everyone has heard of the feat performed by Hero of the Soviet Union Aleksandr Nosov, a member of our regiment, whose name has been entered on the company roster for all times. At a critical time in the battle, when the commander and his deputies had fallen, Nosov assumed command of the subunit and successfully led it for several days.

It is very clear that the quality of the sergeants' independent training depends upon how well it is organized and what sort of assistance the officers provide. The company has accumulated some good experience in this area. For example, the method of giving individual assignments has proved to be a good one. An assignment ordinarily involves a tactical situation on a scale one or two levels above the section.

Following a briefing by the company commander the best prepared sergeants are involved in conducting drills on a mockup of the terrain, where a specific situation is created by means of miniature targets and conventional markers. The sergeants thoroughly study the situation, explain the progression of their thoughts on the matter and justify their decisions. In order to enhance activeness in the exercise, the director gives every sergeant the opportunity to express his views and to determine the most expedient decision by comparing the different views.

The sergeants practice rapidly entering on a map orally transmitted information on the situation, issuing commands using regulation terminology, compiling diagrams of the terrain and filling out range cards.

This sort of self-preparation completely justifies itself in the tactical classes, group exercises and field firing practice, and permits the sergeants to focus their attention in the field on the practical control of the battle, to learn to think and carry out combat missions on a broader scale than that of the section. In a drill in controlling platoon fire conducted during the last fire training exercise, for example, Guards Sergeant Mikhaylov competently performed fire missions in a complex target situation.

The preparing of sergeants to perform as platoon commanders is not limited to those forms of self-training which I have mentioned, of course. There are broad possibilities for initiative in this matter. One thing is clear, however--the sergeants need to boldly assume the additional load, purposively expand their knowledge and skills, in order not only to command the section but also to be prepared to replace an officer at any time. Modern combat demands this.

11499
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LETTERS TO EDITOR, FOLLOW-UP REPORTED

Moscow ZNAMENOSETS in Russian No 7, Jul 83 (signed to press 24 Jun 83) pp 24-25

[Letters to editor and follow-up: "Reader-Journal-Reader"]

> [Text] "...I would like to know how the comradely courts of honor of warrant officers and extended-duty servicemen function...." (From a speech delivered by Senior Warrant Officer L. Gubanov, platoon commander, at a conference of the journal's readers in the Southern Group of Forces)

A School of Legal Information (Facing One's Comrades)

Comradely courts of honor of warrant officers and extended-duty personnel have been functioning in the units and on the ships for 10 years now. During that time they have accumulated extensive experience in the performance of carefully considered and painstaking legal indoctrinational work. The warrant officers' court of honor headed by officer G. Yefremov in one of the units in the Moscow Military District, for example, observes the traditions of these agencies of the army community. The members of the comradely court are distinguished by attention and comradely empathy for fellow servicemen, demandingness and concern for them, collective decision making and participation in legal propaganda, and close ties and interaction with the party and Komsomol organizations and with the military legal bodies.

Just what is the daily work of the court members, who are invested with great trust by their colleagues, like? It consists primarily in seeing to it that deviations from military discipline, ethics and moral standards do not go uncorrected.

Warrant Officer V. Kuznetsov, for example, was committing infractions of military discipline. He did not respond to a personal talk, however. Several of the court members were then directed to have a serious talk with him. A discussion based on principle took place, and Kuznetsov admitted his errors and changed his attitude toward the service. It was not just a matter of this discussion, of course. Bearing in mind the fact that the comradely court of honor's members include Senior Warrant Officer S. Chinnikov, Warrant Officers N. Ionov and V. Nazarov and others, who set an example in the service not just with their words but with their deeds as well and who strive for irreproachable fulfillment of the military regulations in the unit, however, we can understand the positive changes occurring in Warrant Officer Kuznetsov's conduct.

The fact that the commander, his deputy for political affairs and the military legal experts regularly meet with the chairman and members of the court, inform them of the tasks facing the warrant officers and give them advice as to the proper thing to do in a specific situation, unquestionably contributes to the successful functioning of this comradely court. As a result, most of the warrant officers here are outstanding in the combat and political training and set an example in the observance of Soviet laws, the military oath and military regulations.

Many other comradely courts of honor of warrant officers and extended-duty servicemen organize their work in the same manner. They do more than simply make skillful use of preventive measures. It is sometimes necessary, after all, when an individual ignores well intended requests, advice and comradely warnings, to use authority in order to preserve the honor and dignity of the military name. The improper conduct of such a serviceman may be considered at a meeting of the comradely court of honor, and serious, well considered preparations should be made for such a meeting.

A meeting of the comradely court of honor conducted exactingly and professionally can have a positive effect not only upon the guilty party but upon all his colleagues as well. The individual who does not perform his duties conscientiously and whose deeds and actions do not conform to our morals, the military oath and military regulations, after all, answers to the entire collective, and this is the highest form of responsibility.

It is regretful that some comradely courts of honor, which are expected to actively contribute to the indoctrination of the servicemen in a spirit of strict observance of the laws and military regulations and [illegible] to prevent them from committing negative acts, are not totally accomplishing their assigned tasks. Their work is not purposive, they do not take an individual approach to the personnel, they do not observe the principle whereby the courts apply public pressure by degrees and they frequently take extreme steps. Instead of performing painstaking individual work with a person who has transgressed, the comradely court will sometimes begin the "indoctrination" of such individuals after they have repeatedly committed infractions and the court is forced to apply extreme measures of public pressure to them. This is not the correct approach.

Contrary to the regulations governing such matters, subunit (battalion or even company) commanders will usurp the right to decide on turning a case over for consideration to a comradely court, when this is exclusively the unit commander's authority. Some chiefs will petition in reports submitted for the unit commander for a comradely court to review a specific case dealing with the "subject of discharging" a transgressor from the military service. Strange as it seems, such petitions are sometimes supported, which essentially predetermines the subsequent decision rendered by the comradely court of honor.

The unit commanders should remember that this kind of "prescribing" is contrary to the main intent of the work of comradely courts of honor--that of indoctrinating the warrant officers and extended-duty personnel and of creating a highly moral climate in the military collectives.

The comradely courts of honor are expected to develop the good qualities of a Soviet fightingman in the warrant officers and extended-duty personnel. For this reason Marshal of the Soviet Union P.F. Ustinov, USSR minister of defense, demands that we provide the comradely courts of honor with daily assistance and steadily enhance their role in the communist indoctrination of the servicemen, in their indoctrination in a spirit of strict observance of the Constitution of the USSR, Soviet laws, the military oath and military regulations. -- Colonel of Justice S. Morozov

Follow-up on ZNAMENOSETS Articles (He Gave His Word of Honor)

This was the headline of a report submitted by Lieutenant Colonel Yu. Romanov and published in our March 1983 issue. The article criticized officer V. Kostyuchenko and other officials for creating red tape and for callousness in the handling of a housing problem for Senior Warrant Officer M. Savelev.

The official reply, signed by Major General B. Kudinov, first deputy chief of the Political Directorate of the Red Banner Belorussian Military District, stated that the facts presented in the article had been confirmed. Officer V. Kostyuchenko, member of the military council and chief of the district political directorate, had been strictly reminded of the need to be sensitive to the needs and requests of subordinates. Lieutenant Colonel V. Papushi, department chief in the district personnel directorate, was reminded of the need to thoroughly and carefully study each request and complaint from the servicemen.

The district political directorate also informed the editors that Senior Warrant Officer Savelev was issued a warrant for a 3-room apartment on 9 June of this year.

("Disregarding Regulations")

A letter from Warrant Officer A. Golushko was published under this headline in issue No. 5 of this journal for 1983. It reported that the fire truck in the unit is sometimes used for purposes other than its designated purpose and that the warrant officer himself, who is the chief of a supernumerary fire-fighting crew, is called upon to perform details not related to fire-fighting.

Lieutenant Colonel V. Cherepanov from the political directorate of the Southern Group of Forces reported to the editors that the facts presented in the letter from Warrant Officer A. Golushko had been confirmed. The unit command was reminded of the inadmissibility of such infractions: The demands contained in the regulations must be observed absolutely by all servicemen.

("Help Me Get Back Into the Army...")

Respected editors of the journal Znamenosets! I am former Warrant Officer Gennadiy Alekseyevich Tregubov and I am asking for your help. Although it has now been 4 months since I was discharged from the army, I continue to read your journal.

I was born and grew up in Kazakhstan. My father was a frontline officer awarded orders and medals. My mother was a housewife. I became accustomed to hard work as a child. From the age of 13 until I entered the army I worked on a combine. I dreamed of becoming a military man. After I completed my regular service term I requested admission to a warrant officers' school and successfully completed it. When I made my decision to continue in the service I was not looking for an easy life. My service did not begin or progress as I had planned, however....

...I had barely arrived in the subunit when one of my colleagues proposed that we celebrate my new position with some drinks. Other such proposals followed. I began to drink fairly frequently, and I began to receive penalties. People talked with me about the problem, but....

In short, the army soon parted company with me.

Respected editors! Please help me get back into the army. I cannot imagine life without the army. Let it be the most difficult job in the most remote area. I will make amends to the homeland with good and exemplary service, no matter how hard it is. Please, please help me.... -- Warrant Officer (Reserve) G. Tregubov

Comments from the Editors (You Can't Live by Deception...)

V. Podgornyy became a warrant officer in September of 1980. The very next year he was assigned a one-room apartment. An order was then made out for a two-room apartment, into which his family moved. Explaining that he had received the housing with the knowledge of officer A. Kukharev on the basis of fictitious information stating that he had served since 1975, the warrant officer relieved himself, as it were, of responsibility for the forgery and shifted it to his chief.

Was Warrant Officer Podgornyy aware that what was done was unlawful? Apparently, he was, but his conscience did not bother him, and he was therefore entirely satisfied with the resolution of the matter. He would have continued to live untroubled in the apartment, had not an inspector detected the violation of regulations governing the distribution of housing. Officer Kukharev then attempted to save the situation by rewriting the papers to indicate that the apartment was part of the service housing. Since the incident had already come to the attention of higher authorities, however, it was suggested that the warrant officer move into other service housing. At this point he decided that they were infringing upon his rights and wrote a complaint to the editors of ZNAMENOSETS.

Upon receiving the letter, the editors could have answered immediately that comrade Podgornyy's rights were not being infringed upon, that the law was not being violated. They were surprised by the position taken by the letter's author, however, so confident that he was right, and the actions taken by the officials. The letter to the editors was therefore sent on to the political directorate of the Red Banner Carpathian Military District.

Major General Ye. Mikul'chik, first deputy chief of the district political directorate, reported that officer G. Kurbatov had discovered a case of improper

allocation of housing based on false information on length of service in the Armed Forces and that this had been reported to the commander of the military district. An order was issued for the unlawfully obtained housing to be vacated. Service housing was made available to Warrant Officer Podgornyy.

In summary, we would like to point out that the established procedure for allocating housing to seagoing and shore-based warrant officers and extended-duty personnel is designed to contribute to their successful and long service. The documents governing such matters have been issued to all officials with the authority to resolve them, and these officials must in turn explain them to the personnel. The editors have also directed attention to this matter by publishing two commentaries: "Housing is Allocated..." (No. 6, 1981) and "Housing Benefits" (No. 11, 1982). Experience has taught us, however, that some officials will attempt to circumvent the law, resorting even to fraud. You can't live long by fraud, however, as they say.

How Long to Wait?..

At the beginning of February of this year the journal's editors received a letter from Warrant Officer A.V. Borkunov.

He reported that his class rating had been lowered without justification and that the payment of the corresponding compensation had been halted. He had asked those in charge for help but received no clear-cut answer. The letter stated that this had not been the only such incident in his unit.

The editors sent the letter to the command of that unit in which Warrant Officer Borkunov serves, asked it to look into the complaint and report the results to the author of the letter and to the editors of the journal. The unit commander did not answer within the established period of time, however. The editors sent him a reminder in May. Once again there has been no reply. Four months have passed. How long can we wait?

Although the Letter Was Not Published (In the Interests of the Service)

Warrant Officer A. Yefremov is chief of the depot, but, as he wrote the editors, he cannot perform his duties well, since most of the equipment is kept outside and not in storage facilities.

Major General G. Ivanchenko, rear services chief of staff for the Red Banner Far Eastern Military District, replied to the editors that the situation was just the way A. Yefimov described it in his letter. A decision has been made to reassign part of the equipment to the subunits, and storage facilities are being built.

(Nine Months of Silence)

Warrant Officer P. Stolyarenko reported that he was not being paid the salary difference for a position he temporarily held. The editors sent a letter to the commander of the unit in which the warrant officer serves, requesting that the matter be looked into locally and that the warrant officer receive an answer in

accordance with current regulations. Comrade Stolyarenko complained in a second letter, however, that no steps had been taken. The editors sent two more requests to the unit commander, since the established periods for the review of letters had elapsed, but received no reply. The situation was not cleared up until the judge advocate's office intervened.

Major of Justice Ogloblin, deputy judge advocate for the Irkutsk garrison, reported that the warrant officer's first complaint had been resolved and that he had been paid the difference in salaries. Payment was later halted, however, even though the serviceman continued to perform the duties of the higher position. The additional money was paid after a second request was submitted. A written report was issued to the unit commander on the delay in the resolution of the complaint.

After 9 months of silence we finally received a reply from officer Dorofeyev as well: The difference in salary for the temporary position held by Warrant Officer Stolyarenko has been paid. The delayed reply was due to the lengthy hospitalization of the finance service chief, and the warrant officer himself had been on leave.

This answer smacks greatly of formality. After all, someone performed the duties of the finance service chief during his lengthy illness, someone issued pay and allowances to the servicemen! Who is to blame for these many months of red tape? Have those to blame been punished? We still have no answers to these questions.

(What Errors Cause)

Warrant Officer N. Romanov passed the tests for the class rating of "master" in good time, but the corresponding order did not list his name. Major General of Artillery V. Bobrov replied to the editors that due to an error by officials in the unit in which the warrant officer serves, his name was not included on the list of those passing the exams for the class rating or in the order issued by the district commander. Warrant Officer Romanov will be compensated for the material loss he suffered at the expense of those to blame, and he will be permitted to retake the exams for the class rating this year.

A similar thing happened with Warrant Officer A. Alenin. The editors wrote to the finance service of the Red Banner Pacific Fleet, and the service instructed Captain 1st Rank L. Knut to reply: The issue was resolved satisfactorily. The warrant officer will receive the pay for the "master" rating retroactive to June of last year. Those to blame for making up the list improperly have been disciplined. Unfortunately, the names of those to blame were not revealed in either case.

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ARMED FORCES

DRUNK DRIVING ACCIDENT POINTS OUT FAILURES OF COMMAND

Moscow ZNAMENOSETS in Russian No 7, Jul 83 (signed to press 24 Jun 83) pp 28-29

[Article by Maj Ye. Burkun, Red Banner North Caucasus Military District: "Following the Accident"]

[Text] Warrant Officer Vladimir Belkin was busy with his automobile that pleasant October day. He worked rapidly. He had to finish in time to pick up his wife at work.

"Hello, automobile enthusiast!" he heard a familiar voice say.

Belkin looked around. He was right. It was Sitnikov, a school buddy.

"It's been ages"!

"Yes it has. It's been a long time since we've seen each other.... I heard that you'd bought yourself a Zhiguli. I decided to drop by and take a look, and see whether you had a bighead from it all."

"There is nothing to get a bighead from," Belkin said, laughing. "Up to now it's been like the proverb: 'You didn't have enough problems....' Other people relax, while I'm stuck here working on the car."

"Why don't you knock off. Let's go to my place and celebrate our meeting. After your righteous labor, there could be nothing wrong with that."

"You're right. Let me change clothes. I'll only be a minute."

As they drove Belkin told his friend that he had bought the vehicle 6 months previously. He had taken driver training for 3 months but had not passed the exams.

"And so, I'm driving without a license," he continued. "The motor vehicle inspectors don't come here very often, and I do know how to work the steering wheel."

"Don't be modest. You drive as well as a professional," Sitnikov said flatteringly to his comrade.

They breezed up to the house. They drank in the vehicle, thinking that they would spend less time that way. The conversation dragged on, however, and it was already dark when Belkin set out.

He drove the vehicle smartly along the blacktop. He reduced speed prior to turning onto a rural road. A motorcycle sped toward him. Befogged by alcohol, his mind was functioning poorly. When he was almost even with the oncoming motorcycle, Belkin turned the wheel sharply to the left.

Everything happened instantly. The Zhiguli literally smashed the motorcycle carrying Warrant Officer Viktor Shterger. The sharp blow tossed the motorcycle rider onto the side of the road. He felt a severe, burning pain in his leg and loss consciousness. When he came to, he saw Warrant Officer Belkin bending over him. The smell of alcohol hit him in the face:

"Can I help you"?

"Why don't you just go away," Shterger yelled in anger.

Belkin headed for his vehicle.

...Warrant Officer S. Gritsanov was the first in the unit to hear about the accident. Within a few minutes he was working with the victim. He carefully carried Shterger to his own vehicle and hauled him to the hospital. The guilty party watched it all with indifference. When everyone had left, he went home.

The specialists easily established Belkin's guilt: He had been driving a vehicle while intoxicated; he had no driver's license; he had left the scene of an accident and had not aided the victem.

Shterger underwent surgery that very evening. He had two more operations later. It was not known until after the operations that he would be all right. It was a long way to complete recovery, however.

At first Belkin visited his colleague and helped the latter's wife. As subsequent events demonstrated, however, this was more a calculated action than acknowledgment of blame. He understood that when the accident was investigated Shterger's statements would significantly affect the extent of the punishment. After the military tribunal had considered the case, however, and sentenced Belkin to 3 years of probation, he ceased to be interested in the victim's condition.

Once, during the winter, Warrant Officer Shterger's wife asked Belkin to find a vehicle to haul her husband back to the hospital (he had been permitted to go home for a few days). Imagine the woman's bewilderment, when she heard the following:

"I'm in a hurry to get to work. And anyway, why are you asking me? You need a vehicle, you find one."

I have a mental picture of the situation: A woman tortured with concern for her husband's health turning hopefully to Belkin for help.. And she receives only a cold, harsh response. It is not even just a matter of his refusal: Who knows, perhaps the warrant officer was indeed performing some important assignment that day. He could have refused without offending her, however, refused without adding another wound to the vital human soul.

Ol'ga Shterger described all of this in a letter to the editors. She reported with bitterness and indignation that the individual to blame for the accident has suffered no pangs of conscience. Even worse, he is actually defiant....

"Warrant Officer Belkin," officer Mayorenko, a political worker, said without hesitation, "is a good specialist. He is our senior mechanic in the radioelectronic equipment service group. He has no penalties on his record. He has not been found drunk--except for that terrible accident, of course."

I then talked with officer Yu. Gaponov, squadron political worker, and with other comrades of Belkin's. I was always told the same thing: He is a good specialist, and that is the most important thing, after all.

Belkin was readily described as being one of the best. Once this had been done, it would have been awkward, a sign of weakness, to back down. Probably for this reason, when the incident was investigated the warrant officer was given a good reference, compiled according to the notorious service "formula": an efficient worker; no preconditions for flight accidents through his fault; has commendations; is a rated combat master, and so forth. One simply cannot imagine how such an individual, good from head to toe, could commit such a criminally punishable infraction. Then officer Yu. Gaponov began to remember things:

"Yes, he is a good specialist. What sort of person is he, though? He has been caught in dishonest acts and has not always been sincere with his colleagues...."

There we have it. This is a more objective assessment of Belkin and not a model image. For some reason this side of his personality has never been officially reported, however.

What does this mean? Is it connivance? No, it is more like the conventional stamp: People see and know the service performance but not the individual. If not for the accident on the road, Belkin's philosophy of life whereby he regards himself as a "thing in itself" would have gone unchanged.

An individual has committed a serious infraction, crippling a colleague while in a state of intoxication. What should be done? He should make restitution, it would seem. He feels that his involvement with the victim and his family is completely over, however. "I spent a lot of money on food and medicine!" he snapped in one of our conversations. But is empathy measured only in terms of money in such a situation? And how much money would it take to make up for an individual's health?!

Listening to Belkin, one has the impression that he has forgotten that he committed the act which sent Shterger to the hospital and has kept him there for

almost 7 months. He remembers only to the extent to which the incident affected him, damaged his well-being and slightly disturbed his moral contentment. Unfortunately, after 9 years in the army, he has not developed that sense of comradeship and sensitivity which is so natural for military people. He sees nothing reprehensible in the fact that he has not visited the victim once or even inquired about his health in several months. Command's handling of the incident only made Belkin more confident in his attitude.

Neither the accident which Belkin put on the collective's record nor his subsequent behavior was seriously discussed in the unit. What is more, the squadron in which the warrant officer serves was declared to be the best squadron last year. The competition results are not simply technical totals, however. They also involve indoctrination factors. When they made their overall assessment, however, neither the party committee nor command took this into account.

Nor did the Komsomol organization demonstrate principle. It kept totally silent on the matter, as though there had been no accident, no unfitting behavior on the part of a Komsomol member.

The more thoroughly I looked into the circumstances surrounding the traffic accident, the more convinced I became that the trouble did not occur within the space of an hour--it had come to fruition gradually. There is an element which nurtures such developments in the collective. It is primarily the absence of control over the owners of private vehicles on the party of command. Last year, for example, workers with the State Motor Vehicle Inspectorate arrested Warrant Officers A. Golubovskiy and V. Arkhipov and other servicemen for driving while intoxicated. And the unit was informed each time this happened. They made a neat file of the matter and responded with the trite statements: "...report that the improper conduct of the serviceman... was discussed at a general meeting of motor vehicle owners. He has been disciplined." Such reports were sent with a clear conscience to the State Motor Vehicle Inspectorate: We have done everything necessary. Please do not trouble yourselves and do not trouble us. In fact, however, the conduct of the lawbreakers was not discussed anywhere and no-one punished them.

We know that all-forgivingness corrupts. The line between good and bad becomes shaky and unclear, and moral criteria become a relative thing. If an individual drives a vehicle while intoxicated and goes unpunished, he may do the same thing again. This is what happened in the case of Belkin. A month before the accident the warrant officer had been detained by workers with the State Motor Vehicle Inspectorate and taken to... a detoxication facility. The incident was given no publicity in the unit!

I had one last talk with Vladimir Belkin. I asked him how he would assess his behavior.

"I'm guilty, of course, in that I was driving a motor vehicle while intoxicated," he quickly stated, "but I have settled things with Shterger."

Once again he mentioned the money which he had "invested" during that time.

Like litmus paper, the accident on the road brought out the shady sides of Belkin's character. Naturally, the law does not have the authority to demand sensitivity and empathy from him. It is no use hoping that the indifferent individual will understand his error and make a change for the better. The military collective should have its important say in such a matter. This did not happen, however.

The incident might not have occurred at all, if all the work of the unit command and the party and Komsomol activists had been principled and uncompromising.

We feel that all levels of the indoctrinational work performed with the personnel should be discussed in a demanding manner, because, as comrade Yu.V. Andropov noted in his speech at the June Plenum of the CPSU Central Committee, the party "strives to see that we indoctrinate the individual... primarily--as a citizen of the socialist society... with the ideological principles, the morals and interests and the high caliber of labor and behavior inherent in it."

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DEFENSE-FIRE TRAINING DESCRIBED

Moscow ZNAMENOSETS in Russian No 7, Jul 83 (signed to press 24 Jun 83) pp 10-11

[Article by Col V. Smirnov, deputy department chief in the Main Combat Training Directorate of Ground Forces: "The Section in a Defense--Instruction by Correspondence for Sergeants"]

> [Text] Defense is a type of combat. Its objective is to frustrate or repel an offensive (or thrust) by superior enemy forces and to inflict significant losses upon the enemy, and to hold important areas (lines or installations), thereby creating conditions conducive to a switch to a determined offensive.
>
> The motorized rifle section defends a position extending up to 100 meters on the front, which contains all the main and alternative gun positions making it possible, together with adjacent sections, to destroy the enemy with fire along the front and on the flanks of the platoon's strongpoint. -- From the Field Manual of the Ground Forces

A total of 2 hours is allocated for the tactical drill class, "The Selection and Occupation of Positions; Action to be Taken Should the Enemy Employ Nuclear Weapons and at the Beginning of Fire Preparation; Repelling Enemy Attacks Coming From Various Directions; Firing at Air Targets." In order to make the most efficient use of this limited amount of time, the section commanders devote particular attention to their personal, independent preparation. They not only study the field manual and other instructions but also thoroughly master the methods and the procedure for conducting the class, the sequence for achieving the norms and the means and methods of coordinating the section's actions in a defense.

An area is selected for the classes so that the first training subject can be covered in an area without engineered preparation, the second and third subjects in an area of a tactical training field set up with a trench (with a foxhole for each section) and shell slit or dug-out set up for firing at aerial targets.

The experience of the best sergeants has shown that each soldier's activeness and his interest in the achievement of good personal results and consequently, the effectiveness of the class as a whole, depend mainly upon how skilfully an

intense tactical situation is created and how precisely the socialist competition is organized by task and norm. The individual commitments in this tactical drill exercise ordinarily include such points as the selection and occupation of positions, visual target reconnaissance, independent determination of the initial data for opening fire against an attacking "enemy," and the fulfillment of the norms for tactical training and protection against weapons of mass destruction (ZOMP).

The first training subject (20 minutes) should be broken down and worked on element by element: the selection and occupation of a position both with and without "enemy" fire. When the section arrives at the starting position (Diagram 1) the sergeant briefly reminds his men of the basic requirements for the disposition of the troops at a position and indicates the direction from which the "enemy" should appear and the approximate area of the fire positions for the infantry combat vehicle (armored personnel carrier), the machine-gunner, grenade thrower, and the sites for the submachine-gunners. At his command the soldiers then select and take up positions, observing camouflage rules and the rules for firing at an "enemy" and taking into account the possibility that it will be necessary to move to an alternative position. The sergeant assembles the section for evaluating the performance of the soldiers, points out the best positions selected and indicates shortcomings he has noticed in the men. The procedure is systematically repeated at two or three different lines. After making certain that the soldiers have firmly mastered this part, the sergeant begins teaching the personnel how to occupy a position under "enemy" fire. He first briefly outlines the mission for the section. For example: "1st reference point, mound; 2nd reference point, barn; 3rd, single tree.

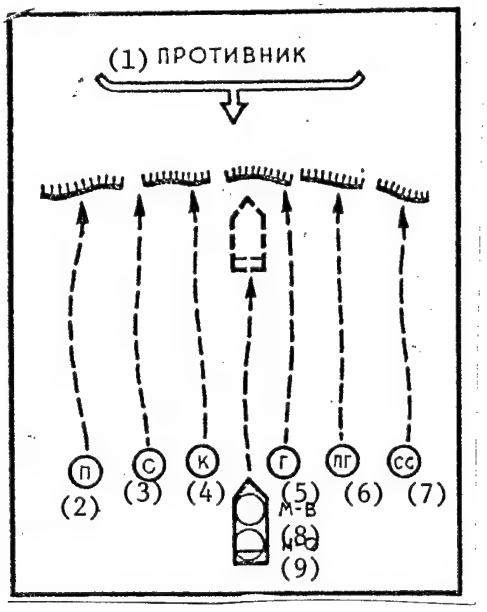

Diagram 1

Key:

1. Enemy
2. Machine-gunner
3. (Rifle?)
4. (Commander?)
5. (Grenade launcher?)
6. (Antitank grenade?)
7. (Launching system?)
8. (Mechanized troops?)
9. (Expansion unknown)

"'Enemy' fire points detected: machine gun--300 this side of reference point 1; tank in trench--10 to left of reference point 2.

"Second section defend position between gully and bushes. Zone of fire: gully and reference point 1 on the right; bushes and reference point 3 on left.

"Occupy fire positions: infantry combat vehicle (indicates main and alternative positions)--sectors of fire: main sector--reference point 2, reference point 3; alternative sector--reference point 1, reference point 2; machine-gunner...; grenade thrower... (also indicates the main and alternative fire positions, main and alternative sectors of fire for each position); submachine-gunners--firing sites (indicates these)."

The section commander then teaches the soldiers how to move up to the positions (this and subsequent training subjects are practiced on a prepared section of a tactical field) in various ways, depending upon the "enemy" fire and the terrain: in a crouch, with a bound or in a crawl. The drill is continued until the actions can be performed smoothly by the section as a group.

If there is enough time, many of the sergeants demonstrate the actions of one or two of the best soldiers instead of making a brief oral critique. This methodological device makes it possible to enhance activeness and rivalry in the class.

The second training subject (30 minutes) is practiced in a situation in which the section is performing the combat mission of defending a position (Diagram 2). It is also broken down into two parts: performing in a situation in which the "enemy" has employed nuclear weapons (fulfillment of the norms for protection against weapons of mass destruction) and action to be taken at the beginning of fire preparation (fulfillment of the tactical training norms). The commander assigns an observer and a duty machine-gunner or submachine-gunner to assure constant readiness to repel any surprise "enemy" attack, as well as to destroy small enemy groups engaged in reconnaissance or attempting to clear passages through our obstacles. He assigns the rest of the personnel the task of completing the engineered organization of the position.

The norms should be worked out in the following order: for protection against weapons of mass destruction--"What to do at the Flash of a Nuclear Explosion" and "What to do at the 'Radiation Danger' Signal; and for the tactical training--"How a Subunit Occupies Shelters in a Defense and What the Men Should do Upon Leaving the Shelter at the Command 'Action!'."

Let us consider the methods used for organizing the section's fulfillment of the first norm for protection against weapons of mass destruction, since in general they are the same for the rest of the norms. First of all, it is important for the exercise to take place in a situation approaching that of actual combat to the maximum degree possible. Some sergeants give a preliminary command (or signal), locate their soldiers near their shelter and make other simplifications in order to demonstrate to the senior chief that their men are well trained. This is detrimental not only to the section's field training but also to the sergeant's authority, and is therefore not to be tolerated. The command to

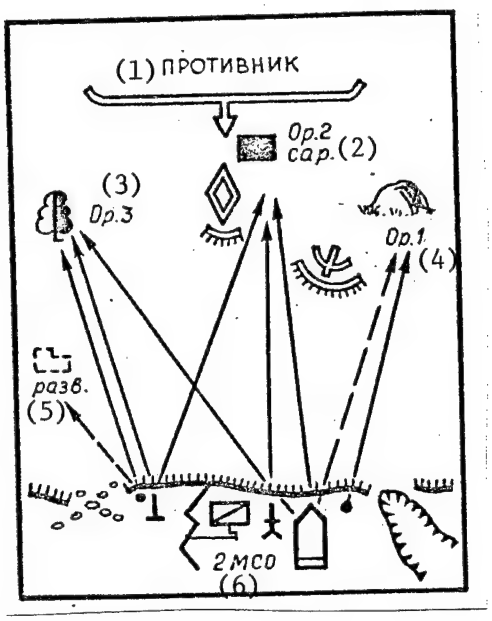

Diagram 2

Key:

1. Enemy
2. Reference point 2 (barn)
3. Reference point 3
4. Reference point 1
5. Reconnaissance
6. 2nd motorized rifle section

begin fulfilling the norm, "Flash to the right (to the left)," is issued unexpectedly. This keeps the section in a state of constant readiness for combat and keeps the personnel at a high level of tension in the performance of the various procedures. The section commander may monitor the performance of his men from outside the trench. After that, he works together with them to achieve coordination for the section as a whole.

After each norm is completed the sergeant conducts a brief critique and assesses the performance of the trainees, reminding them of their commitments.

The third training subject (45 minutes), the principal part of this class, is begun with a signal (at a set time) from the platoon commander, since the "enemy's" actions are ordinarily simulated simultaneously for the entire platoon (Diagram 3). Three components of the training are studied in this phase: what to do when the "enemy" switches to an offensive and how to destroy the enemy in front of the forward defensive edge; what to do if the "enemy" reaches the section's flank; and firing at air targets. All of the components are worked out together, with close unity of tactical operations and the performance of fire missions. The "enemy's destruction in front of the forward defensive edge is accomplished under the conditions of the second preparatory exercise (control of the section's fire in a defense), which is described in the "Fire Preparation Methods for the Motorized Rifle Subunits": as many as 10 different targets appear in succession, beginning at the distant line.

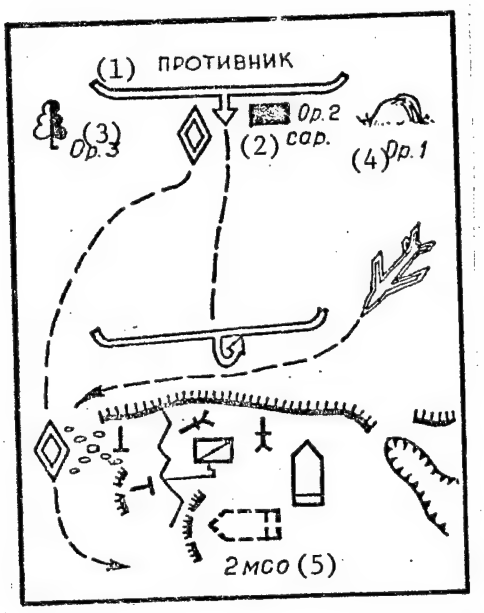

Diagram 3

Key:

1. Enemy
2. Reference point 2 (barn)
3. Reference point 3
4. Reference point 1
5. 2nd motorized rifle section

The class is significantly more effective when the sergeant has all of the soldiers take an active part in spotting targets, reporting on them, independent preparation of the initial firing data and destruction of the "enemy" with simulated shots (antitank guided missile launchings). It is recommended that the sergeant not limit his function to that of issuing various commands for destroying the attacking "enemy" with fire, but that he make frequent use of instruments for monitoring how his men aim the weapon. This improves the exercise and assures maximum use of the combat capabilities of the TOE weapons. The fighting-men prepare the initial firing data and open fire as the "enemy" comes into effective firing range. At the distant approaches the enemy is fired upon with the weapons on the infantry combat vehicle (armored personnel carrier); as he approaches, with machine gun fire; and as he approaches the forward defensive edge, with fire from all types of weapons increased to maximum intensity.

When the "enemy" infantry approaches to within 50-60 meters of the position, the sergeant gives the command "Prepare grenades!" and drills the soldiers in the tossing of hand grenades and destruction of the "enemy" with pointblank fire.

The sergeant switches to the second component--operations when the "enemy" has reached the section's flank--by assigning hypothetical problems and giving hypothetical commands, whereby the crew of the infantry combat vehicle (armored personnel carrier), the machine-gunner (submachine-gunner) and the grenade thrower move to alternative positions and destroy the "enemy" which has penetrated the defense. The maneuver may be carried out on both of the section's flanks.

It is most convenient to use a mockup of a miniature aircraft (helicopter) moving on a frame for teaching the men to fire at aerial targets. The trainees fire three simulated shots (rounds) from the time the target appears until the entire cycle has been completed (one complete turn of the target); as the target passes along the front, when it dives and as it departs. The sergeant does not permit the men to fire haphazardly but teaches them to conduct fire at the aerial targets only with the duty machine gun (when the section's remaining guns are being used for destroying an attacking "enemy") or with concentrated fire from the entire section, depending upon the ground situation.

When it is not possible to use a training facility for teaching the men to fire at aerial targets, the flight of aircraft (or the hovering of a helicopter) is simulated with hypothetical data issued by the section commander.

When he evaluates the performance of his men during the critique, the sergeant sums up the fulfillment of their commitments. He also singles out any soldier who has demonstrated good self-control and steadfastness in the defense and indicates what should be done to correct any deficiencies brought out in the exercise.

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GROUND TROOPS ASSIST HARVEST

Moscow KRASNAYA ZVEZDA in Russian 30 Aug 83 p 2

[Report by Maj L. Makaron: "Personal Participation--Fightingmen in the Harvest"]

> [Text] The first thing which catches the eye in the subunit commanded by Captain S. Zhdanov is the Challenge Red Banner of the Tetyushkiy Rayon Committee of the CPSU, Tatar ASSR. The military motor vehicle specialists received this award for actively assisting the rural residents with the harvest.
>
> It was the task of our group of officers from the Political Directorate of the Ground Forces to summarize the progressive experience of the best military drivers.

Junior Sergeant V. Shemyakin, duty NCO for the tent camp, who greeted us early in the morning in the village of Maloye Shemyakino, reported with pride that his colleagues were exceeding the daily norm by 30-50 percent. We did not have the opportunity at that time to meet Privates V. Maksimov, O. Vikhlo and B. Belyayev, best drivers in the subunit. They were already at work.

Naturally, we did not see all of the military drivers at the dinner table at one time. The harvest makes changes in the usual army schedule. The fightingmen drove up to the messhall one at a time, smiles revealing snow-white teeth framed by dusty, tanned faces. They ate rapidly and returned to their vehicles: the combines must not stop working for one minute.

Everywhere one sensed an atmosphere of seriousness, order and organization. When the water pump on one of the vehicles broke down, for example, it took Warrant Officer V. Oliferenko, platoon mechanic, and Privates S. Moskovkin, I. Yavorskiy and V. Kukushkin, repairmen, only a half hour to correct the problem. The ZIL soon raced off toward the grainfield, motor rumbling.

I met Captain S. Zhdanov, subunit commander, at the threshing floor of the Rodina Kolkhoz. He and kolkhoz chairman A. Svidetelev were working on the problem of accelerating the unloading of the trucks. This year the kolkhoz had an outstanding harvest. The farm workers had spared no effort, and the soil repaid them generously for their work. The farm workers, everyone manning the harvest line, were therefore working under great pressure.

The military drivers, reliable assistants to the grain growers, are making a fitting contribution to the intensive gathering of the harvest of 1983. The subunit motor vehicle operators became part of the kolkhoz harvesting and hauling teams. At a suggestion from Junior Sergeant V. Shemyakin, a Komsomol activist, two or three soldiers were permanently assigned to each combine, who assured the uninterrupted removal of the grain on their trucks. With their example of selfless labor and concern for every handful of grain, the homeland's defenders have rightly earned the love and respect of the farm's machine operators.

Some innovations suggested by the military drivers have now been adopted by all the kolkhoz chauffeurs. In order to reduce the amount of time required to deliver the grain from the field to the threshing floor, for example, the servicemen have mapped out the best routes with military precision. If necessary, they perform minor repairs on the rural roads in advance. This has made it possible for each of the truck drivers to save 5-10 minutes on each run, which amounts to two additional hauls during a shift.

The subunit repairmen are also doing a great deal. A mobile unit outfitted under the supervision of Warrant Officer V. Oliferenko, secretary of the party organization, makes it possible to repair a malfunction or a breakdown right in the field when necessary. This rarely happens, however; the mechanics spare no effort to see that the trucks are in good condition when they leave for work.

"I have a good word to say about all the fightingmen, without exception," we were told by A. Svidetelev, chairman of the Rodina Kolkhoz. "And you know what is especially pleasant to see? Model performances are being given not just by those young men who worked on the farm before entering the army, but also by those who have always lived in the city. The fightingmen--communists and Komsomol members--are making a worthy contribution to the fulfillment of the Food Program with their selfless labor and their party-mindedness in the handling of the job. Our rural machine operators are striving to equal many of them."

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COMMANDER TRAINING DISCUSSED

Moscow KRASNAYA ZVEZDA in Russian 3 Sep 83 p 2

[Article by Col Gen V. Gordiyenko, first deputy commander in chief of the Group of Soviet Forces in Germany: "At the Regimental Level"]

[Text] The tank battalion commanded by Guards Major A. Yudin, with reinforcement weapons, was attacking in the regiment's first echelon. The mission was complicated by the fact that the "enemy" had concentrated the bulk of his antitank weapons on the axis of the attack.

The defense was prepared in advance and the antitankmen had been able to camouflage their positions well. The attackers detected some of them through reconnaissance. It was a risky matter to attack in this situation. Guards Major Yudin understood this and employed a tactical procedure which the "enemy" was not expecting: After switching the supporting artillery fire to the depth of the defensive area, he made a dummy attack with part of his forces. This helped them to spot the antitank weapons not previously detected, which were then destroyed with tank and artillery fire during the attack by the main forces.

There were other moments in the exercise as well, in which Guards Major Yudin and other officers demonstrated good combat skills in a situation of severely limited time and considerable moral-psychological and physical stress. This was only natural. They are taught to operate on the battlefield in this way as part of the commander training. The classes conducted for the officers in the regiment are interesting and are conducted in a situation approaching actual combat to the maximum degree possible. The main stress is on the development of practical skills in organizing combat on the terrain. The necessary quantity of personnel and equipment is used in the classes. This makes it possible for the trainees to fully run through the missions they will have to perform in real combat.

We have many such examples in our commander training. Naturally, the number of officers capable of confidently employing the techniques of modern combat and of making effective use of the capabilities of the equipment and weapons is constantly growing. This is due in great part to the fact that the military council and the political directorate for the Group of Forces constantly focus their attention on the training and indoctrination of the officer corps. Implementing the principles defined at the November 1982 and June 1983 Plenums of the CPSU Central

Committee, they base their work on the fact that the continued improvement of the officers' professional skills must take into account the increased demands made of their ideological conditioning and be based on the reliable guidlines developed by the party for enhancing the work quality in the area of organization and control.

These guidlines are also followed in the units. Guards Tank Chertkovo Regiment imeni Marshal of Armored Troops M.Ye. Katukov can be cited as an example. For many years the personnel of this regiment have achieved consistently good results in the combat and political training and retained first place in the competition. Service in the regiment is a truly remarkable school for the officers. They are almost all highly rated specialists; as a rule they destroy the targets at maximum range with the first shots and skilfully operate the combat vehicles; they are able to assess the situation on the battlefield rapidly and competently, to make well based decisions and see that they are carried out.

The regimental commander, the staff headed by Guards Major V. Kharitonov and the party committee strive constantly to see that the active training methods predominate in the officers' professional training, that every class for the officers is conducted in a complex tactical situation causing them to demonstrate creativity and initiative. The deputy regimental commanders and chiefs of the branches of troops and services always take part in the organization and the conduct of short tactical exercises for the officers, group exercises and demonstration classes and exercises. Guards Lieutenant Colonel A. Martushov, deputy regimental commander for armaments, and Guards Major N. Sidoryak, chief of the engineer service, among others, work hard and productively with the officers.

I want to stress the fact that success in the commander training is achieved most rapidly where all of the tasks pertaining to its organization are performed comprehensively, as a joint effort. The participation of veteran specialists such as the deputy regimental commanders and the chiefs of the branches of troops and services in this work makes it possible to accomplish the tasks involved in the officers' professional training on a better organizational and methodological level.

We know that the commander's development as organizer and director of the training and indoctrination of the troops depends to a crucial degree upon how well he knows the field and other manuals and directing documents. Independent training is assigned an important place in the study of these and naturally, a great depends upon how this work is organized.

I recall a field firing exercise in Guards Tank Berdichev Regiment imeni Sukhe-Bator. The subunits commanded by Guards Captains N. Klepov and Ye. Zanin and Guards Lenior Lieutenant S. Stepanov performed with constraint and uncertainty. Even when success was becoming apparent, the officers performed sluggishly and spent a great deal of time clarifying the missions for their subordinates. The initiative was lost as a result.

Any officer can make mistakes, of course. None of us has any guarantee that he will not. This was a different matter, however. Judging from the records, the officers could not be accused of not knowing the manuals well. When it became

necessary to apply this knowledge in a complex situation, however, domonstrating creativity and initiative, they found themselves in trouble.

What do such things tell us? First of all, there is obviously a gap between theory and practice in the officer training. The regimental staff did not see to it that the independent study of the field manuals was combined with practice in their application. The classes for the officers, including the tactical training exercises, were frequently conducted in simplified situations, with indulgences permitted. Nor did the brief tactical exercises conducted by staff officers with the subunit commanders excel in originality of concept.

There can be no quarrel with the fact that it is not easy to combine the independent theoretical studies of the officers with the practical tasks of training the personnel. This is absolutely essential, however. They are combined in various ways in the different units. In the Guards Tank Chertkovo Regiment imeni Marshal of Armored Troops M.Ye. Katukov, for example, one officer will be given an assignment to make an independent study of the commander's work while organizing a march; the assignment for a second will involve the organization of an attack from the march and penetration of the enemy's defense; another will perform the study for operations in the depth, and so forth. The officers practice what they have studied in subsequent exercises. When they have learned to do this sufficiently well, they are given new assignments.

In the Guards Tank Berdichev Regiment imeni Sukhe-Bator the officers' independent studies have been permitted to proceed on their own. Naturally, this work is not very effective in the given regiment, and the exercises demonstrated this fact.

The situation is now improving. The officers' independent studies are being combined with the planned work, with the practical performance of various tasks. Everyone receives individual assignments. The results of their fulfillment are discussed with the officers, drills in the field and short tactical exercises are conducted with them. This has forced many people to reconsider their attitude toward the independent studies. Among other things, the individual commitments of many officers now include points calling for their participation in rationalization and invention work and in the preparation of methodological aids and outlines for the more difficult subjects. When the competition results are summed up, the commander consider his work in this area along with the other indicators.

This approach is having a good effect in the subunits. The positive rivalry among the commanders is creating a spirit of competition in their subunits as well. The company commanded by Guards Senior Lieutenant P. Likhachov, for example, which previously lagged behind, has recently almost caught up in the combat and political training with the excellent company commanded by Guards Senior Lieutenant V. Loykovskiy. The training level of the officers and the subunits is becoming uniform.

Much hope for progress in the regiment is linked with enhanced responsibility on the part of the officers and all the personnel for their training, with the development of a desire to progress and achieve more in each serviceman.

This is the proper attitude. It is not enough simply to hope, however. They need to combat with greater resolve shortcomings interfering with the professional development of the commanders. And there are still numerous such shortcomings in this regiment, as there are in certain others. These include various types of indulgences, the absence of constant monitoring of the independent studies and failure to fulfill the planned assignments.

The officers' assemblies do not always produce proper results. The following is an example. We know that various types of simulators can greatly intensify the training process, if they are competently used. No mention was made of these, however, at an assembly of platoon and company commanders held in one of the units. It is therefore not surprising that the simulators in this unit are not used as actively as could be desired.

We need to work hard to enhance the effectiveness of competition among the officers as an efficient means of achieving the goals set for their professional growth. There is still a great deal of formalism in this matter. Is this not demonstrated by the fact, as an example, that many commitments accepted by the officers at the beginning of the training year for the winter training period were not fulfilled in certain subunits and units? In some places these were simply forgotten, because the results of the competition are not regularly summed up and are given no pubilcity.

Incidentally, in certain other units in which I dealt with this matter, the improvement of methodological skills is not mentioned at all in the socialist commitments of a number of commanders, staff officers and chiefs of branches of troops and services. Such things need to be specifically defined in such cases, just as they do in any other area. A mobilizing effect could be produced, for example, by a point in the staff officer's commitments calling for the preparation of a methodological outline on a certain subject, the conduct of a demonstration class with the subunit commanders or the summarization of experience in the use of simulators in one of the battalions. It would also be beneficial for one of the staff officers to summarize the experience of company or battalion commanders in working with the noncommissioned officers.

We need to admit that this is partly a failure on the part of officers in the combat training directorate for the Group of Forces. We had a serious discussion of this matter at one of the party meetings. It was noted that when some of the directorate officers visit the units, they sometimes only list the shortcomings and do not bother to learn their causes, to find ways of further improvint the organization of commander training and enhancing the role of competition in the training. This practice was resolutely condemned. It was recommended that the communists in the combat training directorate focus their attention on qualitative indicators in the work. This very thing is demanded by the decisions coming out of the June 1983 Plenum of the CPSU Central Committee.

The initial results are encouraging. A group of directorate officers recently worked in one of the regiments. They studied a number of matters pertaining to the organization of interaction between motorized rifle and tank subunits and the air forces. When their study was completed the unit commanders were given specific recommendations for improving the officers' training in this area.

The monitoring of the extent to which the various points contained in the commander training program are mastered occupies an important place in the work of the directorate officers. It has now been stepped up. We shall try to do everything possible to see that there are fewer breakdowns and uncoordinated actions in the training process. Officers in the combat training directorate, together with officers in the units, are persistently seeking more effective ways to train the personnel.

In short, we regard the improvement of commander training to be an extremely important task in the struggle to successfully complete the training year and further enhance the combat readiness of the forces.

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NATO ARMY AVIATION USE OF HELICOPTERS DESCRIBED

Moscow ZNAMENOSETS in Russian No 7, Jul 83 (signed to press 24 Jun 83) pp 26-27

[Article by Eng-Maj V. Nelin: "Helicopters Over the Field of Battle"*]

[Text] The foreign military experts stress the fact that a characteristic trend in the development of NATO's army aviation is the extensive employment of combat helicopters designated mainly for combatting armored equipment and for restricting the maneuvering of the enemy's mechanized units. This is why combat helicopters have undergone considerable development in recent years and have changed from fire support means to assault weapons.

The NATO ground forces have the following formations of combat helicopters for performing missions for the army aviation; Battalions of army aviation, with one or two companies of combat helicopters in each, as an example, have been formed in the infantry, mechanized and armored divisions of the U.S. Army. A company (its structure is diagrammed in Figure 1) has 21 AH-1 helicopters, three UH-1H Iroquois and 12 OH-58 Kiowa reconnaissance helicopters. A regiment of antitank helicopters, numbering, along with other types, 56 Wo-105P helicopters, has been created in each army corps of the Bundeswehr (FRG) (the regiments consist of two squadrons, each regiment having two squadrons of four flights of seven aircraft). The armies of Great Britain and France have squadrons of combat helicopters, which are a part of the army aviation regiments. In Great Britain each such regiment has 12 Lynx (AH.1 Scout) helicopters; in France, 30 SA-342M (Alouette-3) helicopters.

Although the units of combat helicopters, especially the American units, have repeatedly been reinforced in recent years, the command of the U.S. ground forces is persistently seeking new organizational structures. Among other things, as we can see from reports contained in the foreign press, a structure is being worked out for separate assault (antitank) helicopters brigades designated mainly for combating grouped armored targets. The scale of employment of combat helicopters is increasing significantly as brigade-scale formations are created. In the assessment of the foreign military experts a separate assault helicopter brigade (135 helicopters) is capable of destroying more than 300 tanks on a single flight.

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* First part of article published in issue No. 6. Based on information taken from the foreign press.

The foreign experts have concluded from the experience acquired by armies of the NATO bloc in the conduct of local wars and troop maneuvers that combat helicopters can employ various tactics. The basic tactic is the following, however: helicopters always strike unexpectedly, ordinarily flying to the target in small groups at low (around 60 meters) or extremely low (15 meters) altitudes, as well as by hugging the terrain (at treetop level), making maximum use of their camouflage and protective features, and strike simultaneously from several directions, appearing in the detection zone for only a brief time (20-50 seconds). Selection of the flight mode depends upon the distance from the helicopters to the frontline and is determined by two main (and absolutely opposite) factors--minimal fuel consumption and maximum safety. According to the American military experts, flights conducted at a distance of 8 kilometers or less from the frontline should be made by hugging the terrain. This assures the maximum possible degree of safety.

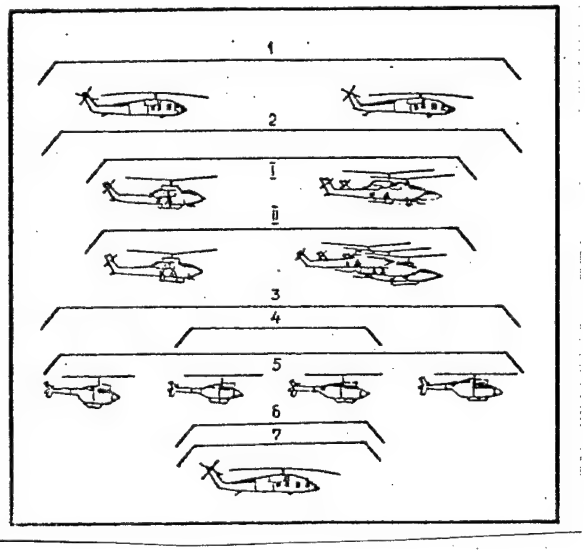

Figure 1. Standard composition of company of combat helicopters (USA): 1. Company flight support section (two UH-1H helicopters); 2. Three platoons of combat helicopters (seven AH-1 helicopters in each) consisting of sections I and II; 3. Reconnaissance helicopter platoon (12 OH-58 helicopters); 4. Platoon control; 5. Three reconnaissance helicopter sections (four helicopters in each); 6. Service platoon; 7. Platoon control helicopter.

At the present time the most common, preplanned operations by combat helicopters involve being summoned, operating from ambush or on independent search flights. They ordinarily fly over and interact closely with the combat formations of their own ground forces (the depth of operations of a company of combat helicopters over enemy territory is on the order of 40-60 kilometers). Units and subunits of combat helicopters are employed on the tactical level. They are ordinarily attached by company to combined-arms tactical groups (brigade or battalion), the commanders of which plan the combat operations of the helicopters, assign them the missions and arrange for all-round support for their operations. The divisions and corps contain only a reserve of combat helicopters.

The destruction of armored targets is assigned to combat helicopter groups, which include up to 5-7 combat helicopters and three or four reconnaissance helicopters. The standard composition of such a group and its combat order are indicated in Figure 2. It consists of a group commander (on a reconnaissance helicopter) and two reconnaissance and assault sections. Each of the latter includes one reconnaissance helicopter.

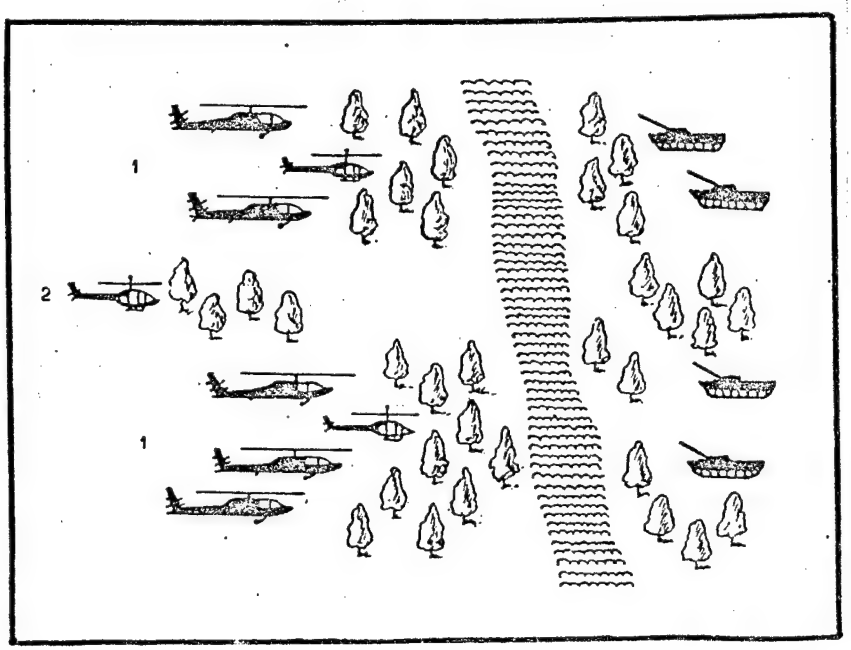

Figure 2. Standard composition and battle order of an assault combat group: 1. Reconnaissance and assault section; 2. Group commander.

When performing missions of destroying the enemy's armored equipment, the subunits of combat helicopters may strike the targets in succession (with the forces divided up into three parts) or several groups of subunits may make simultaneous strikes ("massed operations"). The first system is employed when it is essential to conduct continuous fire against the enemy. In this case one third of the helicopters are attacking, one third are en route and one third are at a forward refueling and ammunition supply point.

The second system is preferred when it is necessary to carry out a massed attack against large enemy groupings within extremely short periods of time. It is not possible to conduct continuous fire against the enemy in this case, however (the helicopters require 45-60 minutes to return to the firing line).

The selection of the system to be used is determined by the commander of the formation (unit, combined-arms tactical group) in the interest of which the combat helicopter subunits are being used, in accordance with the specific situation developing on the battlefield. Figure 3 shows the pattern of control and interaction between the combat helicopters and the units and formations of ground forces (in the USA) during combat operations.

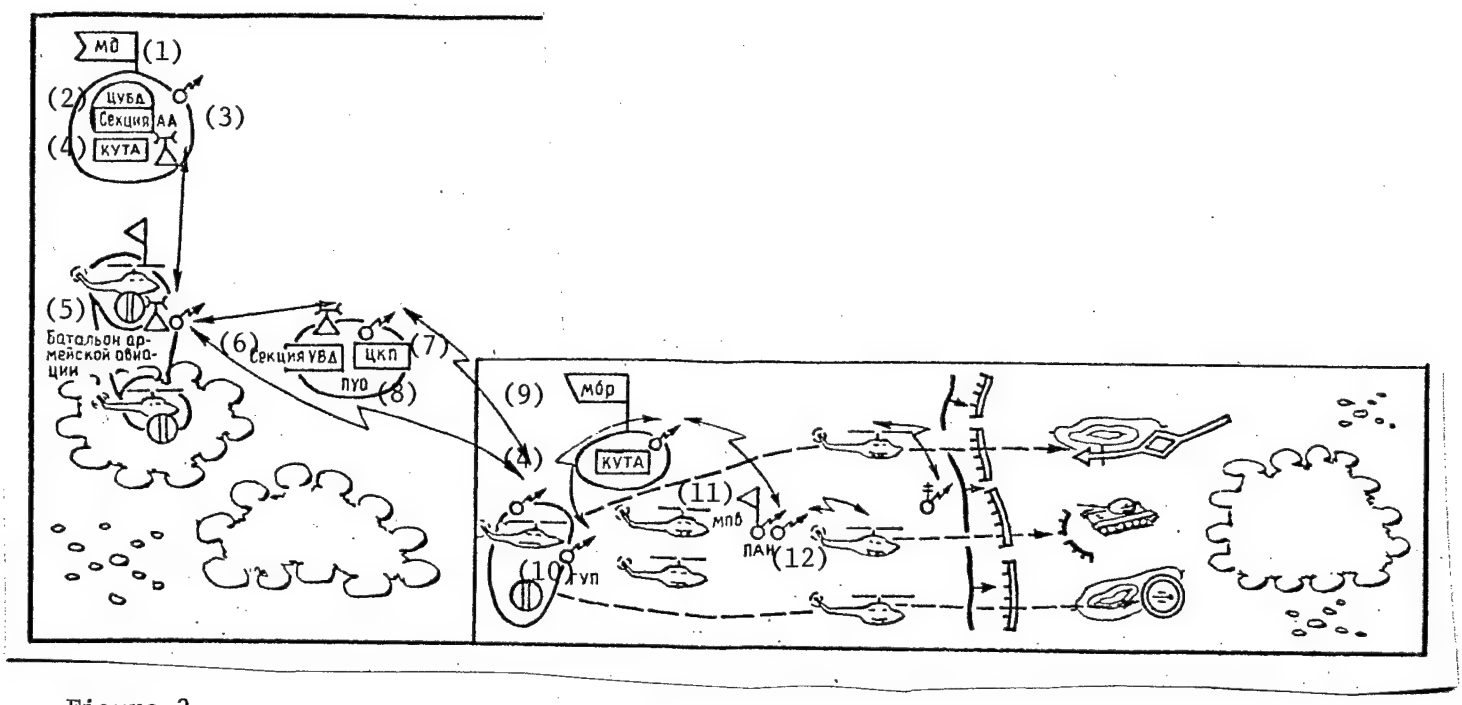

Figure 3.

Key:

1. Mechanized battalion
2. Combat operations control center
3. Army aviation section
4. Tactical air control team
5. Army aviation battalion
6. (Air control section?)
7. Army aviation flight control center
8. Tactical aviation control and warning post
9. Mechanized brigade
10. Tactical aviation flight control group
11. Motorized infantry battalion
12. Forward air controller

NATO's military leaders are constantly enhancing the effectiveness of combat helicopters by perfecting the tactical features for their combat employment. Among other things, good results are expected from the so-called joint plane-helicopter assault groups, which include three or four reconnaissance helicopters, up to five combat helicopters and four or 5 assault aircraft. The U.S. Army began to work out a system for employing such groups in the mid-70s, when the A-10 assault aircraft was developed (its purpose is to provide direct air support for the ground forces). Despite the fact that the first experimental joint exercises involving assault planes and combat helicopters were unsuccessful, the possibility of using such groups successfully was confirmed. The procedure for their operations might be the following. Reconnaissance helicopters would pinpoint the targets of the strikes, after which the combat helicopters, together with artillery, would first destroy the air defense weapons. After this, strikes would be made against the main targets from the flanks and the rear of the group of assault planes, and a second attack would be made by the combat helicopters until the mission has been completed. The American press states that a positive effect from the employment of joint assault air groups

is the fact that the effectiveness of the operations of the helicopters and planes is enhanced 2- to 3-fold (compared with the system of employing them separately for the same missions), while losses are cut by 50 percent.

The use of antiaircraft guided missiles with semiautomatic wire-type guidance systems with a short maximum firing range (less than 3.5-4 kilometers), which have to be tracked throughout the flight up to the point of hitting the target, is one of the shortcomings of the modern combat helicopters of the NATO ground forces, which significantly influences their effectiveness. This means that the combat helicopter is forced to remain for a comparatively long time within visibility of the enemy's means of counteraction and is therefore in danger of being destroyed. Work is underway on the development of a new generation of antitank guided missiles in the NATO nations for eliminating this shortcoming. The Hellfire antitank guided missile, for example, has been developed for the AH-64A helicopter in the USA. It is outfitted with a semi-active laser homing head and has a firing range of more than 6 kilometers. This missile can be launched either with direct aiming or from concealment, which significantly reduces the enemy's possibilities for destroying the helicopter. In the latter case the targets are illuminated by laser from a forward air controller (Figure 4) or from a reconnaissance helicopter. The OH-58A Kiowa reconnaissance helicopter is being modified for this purpose in the USA under a program for modernizing helicopters in the ground forces. The main purpose is to outfit the helicopter with a reconnaissance and sighting system.

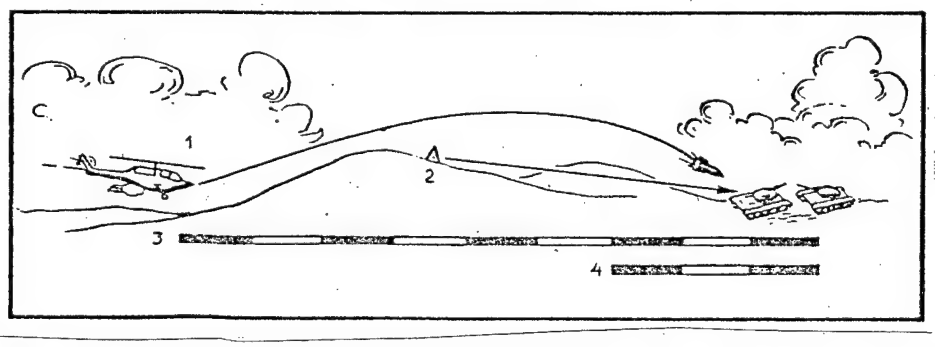

Figure 4. The launching of a Hellfire antitank guided missile from an AH-64A Apache helicopter from a concealed position: 1. AH-64A helicopter; 2. Forward air controller for providing laser illumination of the target; 3. Possible launching range for the Hellfire antitank guided missile; 4. Launching range for antitank guided missiles with wire-type guidance systems.

And so, enhancement of the combat capabilities of the ground forces, including those of the army aviation, occupies an important place in the plans for military preparations by the NATO nations. This makes it essential for the Soviet fighting-man to vigilantly follow the buildup of armaments in the NATO nations, a danger to the cause of peace, and be prepared to repel any adventure undertaken by the imperialists.

11499
CSO: 1801/451

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INSERTS IN COLOR

The West German Wheeled (6 x 6) Armored Personnel Carriers - The F-16B Fighting Falcon Fighter of the Pakistani Air Force - The American Reconnaissance Helicopter OH-58A Caiova - The English Antimissile Destroyer D86 "Birmingham"
(Unattributed)

10272
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MILITARY STRATEGIES OF GREAT BRITAIN, WEST GERMANY REVIEWED

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 6, Jun 83 (signed to press 16 Jun 83) pp 7-14

[Article by Capt 1st Rank A. Karemov and Col (Ret) G. Semin: "Certain Provisions in the Military Doctrines of the Basic European NATO Countries"]

[Text] Loyal to their peace-loving policy, the Soviet Union and the other socialist commonwealth nations are doing everything within their power to improve the international climate, to reduce the arms race and ultimately prevent a new world war.

As is known, Soviet military doctrine is based upon the progressive ideas of defending the socialist victories of the workers and strengthening the peace and security of peoples. In fighting constantly for peace, the Soviet Union has unilaterally rejected the use of nuclear weapons first and recently on behalf of the socialist countries it introduced new constructive proposals on a mutual weapons reduction in Central Europe.

Completely different doctrines are adhered to by the United States and the leading European countries and they endeavor by force to hold up the natural course of historical development, to preserve the positions of imperialism and to clear a way for carrying out its aggressive global plans. They do not conceal the fact that their military doctrines not only do not exclude the possibility of being the first to use nuclear weapons but are actually based on this dangerous intention for unleashing war.

The British, West German and Italian ruling circles, under the pressure of the American administration and under the pretext of the "Soviet threat" fabricated by them, have approved the NATO decisions to annually increase allocations for military purposes by 3 percent (at present, it is already a question of 4 percent) and increasing the bloc's nuclear forces in Europe by deploying 464 cruise missiles and 108 medium-range ballistic missiles (Pershing-2) (starting in 1983) by the end of the 1980's. France supports these decisions although is not a member of the military organization of this aggressive bloc.

The basic European NATO countries in their militaristic preparations consider not only the demands of the bloc's coalition military strategy but also the provisions of American military doctrine as well as its changes on strategic

questions, particularly in the views on the organizational development of the armed forces and the methods of conducting combat operations.

However, regardless of the subordination of the military doctrines of the member nations to bloc interests, they also have a strictly national content and contain views on the questions of preparing for war considering the economic development, the domestic political and geographic situation of each state.

British Military Doctrine

In recent decades, British military doctrine has been shaped under the impact of the change in the nation's role and place on the international scene as a consequence of the collapse of the British Colonial Empire. The English authorities have endeavored to preserve positions in their former colonies and dependent countries as well as strengthen their leading position in Western Europe without allowing the military and economic might of France and West Germany to assume the lead.

In pursuing aggressive aims and in endeavoring to increase its authority in NATO, Great Britain has been spending enormous amounts on military purposes (in the 1982-1983 fiscal year, more than 14 billion pounds sterling were allocated). Here Great Britain has pursued increased activity, in comparison with the other member nations, in carrying out the weapons plans outlined by the bloc. The Thatcher Government has even depicted the military conflict with Argentina (April-June 1982) which was employed by the Conservatives primarily to recover lost political positions within the nation as a "great contribution to the defense" of the West and an actual testing of the strong and weak points of allied obligations and new weapons systems as well as the possibilities for deploying large mobile formations of NATO armed forces.

The political essence of the doctrine is that it is aimed at resolving sociopolitical contradictions in the world using military force in the interests of the nation's ruling class. In accord with this the Soviet Union, the world socialist system and the national liberation movement have been defined as the main enemy.

The current Conservative Government since the first days in power has proclaimed a rigid course vis-a-vis the USSR and the other socialist commonwealth nations, namely: undermining the positions and influence of the Soviet Union in the world, disrupting the existing balance of forces in Europe and achieving military superiority of the West over the Warsaw Pact nations.

The British military-political leadership feels that these goals can be achieved only by the common efforts of NATO and the entire capitalist world headed by the United States. The Conservative Government has repeatedly stated that the British affiliation with the aggressive North Atlantic bloc is of primary significance and nothing can lead to the disrupting of its obligations to the alliance. At the same time it has emphasized that under the conditions where the former colonial countries raise the question of a new international economic order it is also very important to defend the interests of

the NATO states as well as outside the limits of the bloc's zone of "responsibility" and in particular the seizing and holding of raw material sources and important military strategic regions.

Great Britain has developed "special relations" with the United States and primarily in the military-political area. These are based on a "nuclear partnership" which means a great dependence of Great Britain on the United States. The Conservative Government follows behind the domestic policy of American imperialism and with its aid it plans on maintaining its voice and influence in European affairs. For this reason it is no accident that the doctrine largely conforms to the ideas of U.S. military policy as well as with the NATO coalition strategy.

The British leadership has set out to recover its lost positions in the Near East, particularly in the Persian Gulf, in Southeast Asia and in other areas which are important in military strategic terms. English officials have stated directly that they are ready to use armed force in an exacerbation of the situation in any of the designated areas. For this, the Ministry of Defense has hatched plans for creating its own "rapid deployment forces" following the American model and with these it could provide rapid and effective direct military intervention into the affairs of the developing states.

Great Britain has provided the greatest possible aid to the Pentagon in establishing new military bases and expanding existing ones on British territory, in promising to ensure their high combat readiness. The Conservative Government of M. Thatcher, in actively supporting the "partnership" in the North Atlantic bloc, was among the first to agree to the deployment of 160 American cruise missiles on British territory and for a number of years has been maintaining in the Indian Ocean a squadron of 4-6 vessels and also together with the United States is putting pressure on the Western European nations in the aim of increasing their contribution to strengthening the NATO troop grouping.

Practical steps by the ruling circles confirm the course adopted of the militarizing of Great Britain. These include: the enormous and constantly growing military expenditures, active involvement in the arms race, strengthening the military-industrial potential of the nation, improving the infrastructure and civil defense and so forth.

In allocating budget funds, the Ministry of Defense has paid basic attention to the main programs such as: modernizing the strategic nuclear forces, reorganizing and upgrading the general purpose forces, to the purchasing of weapons and military equipment as well as to carrying out extensive scientific research and experimental designing in the military area. Great Britain is a highly developed industrial nation, one of the NATO arsenals, and it supplies weapons not only to its own armed forces but also to many states in the world. The monopolies involved with military production hold a dominant position in industry, trade and finances.

In the system of the European theaters of war, Great Britain has been put in a separate zone, with a large number of important military installations and facilities (airfields, naval bases, dumps, communications centers and so forth) located on its territory. Preparations for war are being carried out in close

collaboration with the Pentagon and the nation supports over 20,000 American servicemen while the United States uses eight air bases and several naval supply points. Here also are located American ammunition dumps, including nuclear ones, communications centers and so forth.

In following the example of the White House, the Thatcher Government has intensified work in the area of developing new types of chemical weapons. In particular, there are plans to equip the armed forces with binary toxins.

English specialists view the nature of potential wars considering the composition of the opposing sides, the scope of military operations and the employed weapons. War between the two coalitions (the NATO bloc and the Warsaw Pact) is considered most probable. The possibility is also not excluded of conducting it against the developing nations where, in the British opinion, the economic and political interests of Great Britain would be threatened. A clear example of this would be the armed conflict with Argentina over the Falkland (Malvinas) Islands.

In terms of the scope of military operations and the employed weapons, British doctrine distinguishes the following types of wars: universal nuclear and limited (including local).

The doctrine recognizes the unlimited use of nuclear weapons in a universal war in the form of a nuclear offensive and the possibility of conducting limited wars not only outside the NATO zone but also in Central Europe. At the same time, English specialists have been extremely restrained over the idea advanced by the White House of initiating a "limited" nuclear war in Europe, viewing in this an increased threat to the British Islands.

It is felt that a war in Europe involving the unlimited use of nuclear weapons could break out by a surprise attack or after a short period of increasing tension, as well as by the use of only conventional weapons at the outset of the conflict, followed by tactical nuclear weapons and lastly by strategic ones.

In the area of the organizational development of the armed forces, military doctrine demands the having of compact, mobile and balanced troops or naval forces which would be capable of ensuring the achieving of the political goals and carrying out the strategic tasks in any probable conflicts.

The total number of the regular British armed forces in peacetime is maintained on a level of 330,000-340,000 men. They include the ground forces (judging from recent press releases, there are around 163,000 men here), the Air Force (92,000) and the Navy (73,000). According to purpose, the English command divides the armed forces into strategic nuclear and general purpose.

The former includes 4 nuclear missile submarines equipped with Polaris-A3 missiles (each with 16 ballistic missile launch tubes) and 6 torpedo tubes. In the opinion of English specialists, the warheads of the given missiles are already obsolete (the subs were commissioned at the end of the 1960's) and do not ensure the effective penetration of antimissile defenses. At the beginning of the 1970's, Great Britain began to carry out the Shevaline Program which envisaged the development of a new warhead of the MIRV type. This, in the

estimate of the English command, would significantly increase the strike power of these forces. At the same time at the beginning of the 1970's, the service life of the first English nuclear missile subs will be up and there are plans to replace them with new ones armed with American Trident-1 missiles and in the future the Trident-2. There are plans to build 4 or 5 subs.

All the remaining staffs, formations and units are in the general purpose forces. These include: 4 armored and 1 artillery division, 6 separate brigades and a significant number of special units and subunits (they are armed with over 1,100 tanks, around 5,700 armored personnel carriers and infantry combat vehicles, more than 340 field artillery pieces, and approximately 250 army aviation helicopters), over 30 combat aircraft squadrons (up to 450 units, not including combat training ones), over 210 ships and launches, up to 30 combat aircraft and over 120 helicopters of Royal Navy Aviation as well as a marine brigade.

Carriers of nuclear weapons can be found in each armed service, including: Lance guided missiles (12 launchers) and nuclear artillery pieces in the ground forces, carrier aircraft such as the Bucaneer, Tornado and Jaguar in the Air Force and Naval Aviation carrier aircraft (the Sea Harrier).

Such a structure of the armed forces, in the view of the English command, makes it possible to use them flexibly and in various wars and conflicts. As was emphasized by the British Minister of Defense, the speed with which the strong naval grouping was dispatched to the South Atlantic during the Anglo-Argentine conflict was possible due to the high professionalism, readiness and mobility of the English armed forces and civilian services. In his opinion, this makes it possible for them to respond effectively and promptly to any events both in the zone of NATO and outside it.

On the questions of the training of the armed forces, the methods of their combat employment and the conducting of combat operations by the troops, British military doctrine rests fully on the concepts of NATO coalition strategy and this it has accepted unconditionally. Military organizational development is carried out in the areas of improving the organizational structure of the armed services and increasing the mobility, the fire and strike power of the formations equipped with new models of weapons and combat equipment.

Foreign specialists view the British strategic forces, on the one hand, as a complement to the American ones and, on the other, as NATO nuclear forces in the theater of war.

The combat employment of the general purpose forces is viewed only as part of the NATO Joint Armed Forces and primarily in the Central European and Northern European theaters of war, while the navy is to be employed in the East Atlantic and the English Channel zone. In individual instances the possibility is assumed of the involving of English troops of limited size outside the limits of Europe in "defending the interests" of Great Britain and for "providing aid" to the British Commonwealth countries.

Foreign specialists feel that 90 percent of the units and formations in the English ground forces, all the combat aircraft and the nuclear weapons delivery

systems and up to 85 percent of the basic classes of ships can be made available to the Supreme Command of the NATO Joint Armed Forces in Europe. For example, even in peacetime the British Rhine Army (55,000 men) has been deployed as part of the NATO Northern Group of Armies and in the event of an armed conflict the size of this army should double. British Marines armed with landing equipment and helicopters is to be employed primarily in the Northern European theater of war.

The English Air Force has been assigned tasks of supporting the ground forces and the navies of the NATO allies in the European theater of war and in the Eastern Atlantic as well as providing air cover for English territory and the sea lanes.

The nation's navy, in accord with the doctrine, should win and maintain supremacy in the areas of combat operations, make nuclear missile strikes, conduct amphibious operations, counter enemy submarines and surface vessels and defend the sea lines of communications.

West German Military Doctrine

In the content of FRG military doctrine, there is a large influence of the reactionary traditions of German imperialism, its aggressiveness as well as a high level of economic and scientific-technical development in the nation.

Contrary to the resolutions of the Crimean and Potsdam Conferences and the joint agreements of the victor powers, the Western states immediately after the defeat of the Nazi armed forces set out to split Germany, to maintain large monopolistic capital, to remilitarize the nation and create a separate West German state. Since the formation of the FRG (September 1949) the foreign policy program of its ruling circles has been based on revising the results of World War II relying on the Western countries. For example, in the first postwar constitution the FRG was described as a state of the "transitional period" and it did not recognize the postwar limits existing in Europe and claimed territory within the boundaries of the former Third Reich on 1 January 1937.

The Western powers undertook further steps to resurrect a militaristic base in the FRG. Here military industrial facilities were finally stopped from disassembly and certain restrictions were lifted for West Germany in the area of shipbuilding, navigation, chemistry and scientific research. The nation was given the right to create large police formations.

A particularly rapid rebirth of the militaristic base and the strengthening of FRG political and economic positions in capitalist Europe commenced after the FRG joined NATO and the Western European Union in 1955. The Bundestag adopted a resolution for arming the Bundeswehr with missile weapons and a law on universal military service. In the aim of gaining access to nuclear weapons, the West German government began to favor the formation of so-called multilateral nuclear forces within the North Atlantic bloc and initiated work to develop its own nuclear industry (at present, there are 20 AES in operation).

Up to the present, the FRG in terms of the output of industrial products holds third place (after the United States and Japan) in the capitalist world and is

the strongest industrial power in the European Economic Community (it produces over 30 percent of the industrial product of all the EEC countries). According to data in the foreign press, FRG firms independently and in cooperation with other Western European countries produce significant amounts of all types of weapons and military equipment, with the exception of nuclear ammunition and strategic missiles.

The political essence of FRG military doctrine stems from the class nature of the state as an imperialist power and as one of the main U.S. partners in NATO. This is aggressive anticommunism aimed at preparing for war against the Warsaw Pact countries, the desire to weaken the positions of socialism in the GDR and the other neighboring Eastern European states and resolve the so-called "German problem" (German reunification) in its favor, revanchist aspirations to recreate Germany in the prewar (1937) boundaries and the establishing of hegemony in Europe by economic, political and military pressure on the continent's countries.

The FRG leadership proposes to achieve its political aims by joint efforts of the European NATO countries with active U.S. support. It considers the Warsaw Pact states and primarily the Soviet Union to be the basic enemy.

Regardless of the altered balance of forces in the world in favor of socialism, the FRG ruling circles continue to view war and the threat of using force as a means of achieving the set goals. Moreover, in the long run they hope to create a favorable strategic situation along with NATO whereby threats, blackmail and military aggression against the socialist commonwealth nations could be less risky for the FRG and more successful than at present. The concept of "crisis management" which has been worked out by Western specialists should provide such a situation. Its essence consists in the planned and systematic increasing of political, diplomatic, ideological and psychological, economic and military measures aimed at creating an internal (primarily in the socialist countries) or international political crisis and the forcing of the enemy to make political concessions. At the same time, the nation and the armed forces can be readied to initiate a war and this, in the opinion of the concept's authors, should improve the strategic position of the North Atlantic bloc.

A change in the balance of forces in favor of NATO is considered to be a favorable condition for initiating a war in Europe. This is to be achieved by intensifying the arms race and creating a political crisis in the socialist commonwealth or individual European socialist countries which would paralyze interaction between them or undermine their defense capability. For example, in endeavoring to exacerbate the situation in Poland, the Bonn authorities undertook a number of measures showing a return to the concept of keeping the so-called "German question" open and recognizing the German Reich in the 1937 frontiers.

The FRG leadership has assumed that abrupt changes in the strategic situation could be brought about by conflict situations arising in adjacent zones of opposing alliances, on territories and adjacent waters which are of vitally important significance for both sides. A confrontation between the USSR and United States in such regions could lead to a military clash between the two coalitions.

The basic content of the military-technical aspect of FRG doctrine is determined by the "flexible response" strategy which has been adopted in NATO.

FRG military doctrine considers the possibility of the development of two types of wars in Europe: an all-out nuclear one and a limited one which does not reach the scale of an all-out nuclear one. Here the West German leadership considers as an all-out nuclear war one which threatens the existence of all the NATO members, including the United States, the FRG and the other Western European states. It is felt that this will be conducted by coalitions of states with the unlimited use of nuclear weapons and can assume a global nature. In the opinion of Bundeswehr specialists, such a war with a nuclear parity between NATO and the Warsaw Pact is improbable.

A limited war is viewed only as a step in the escalation of a military conflict, that is, from the employment of conventional weapons to the exchange of strikes by nuclear strategic forces, and this under certain conditions may not develop into an all-out nuclear war. The agreement of the FRG government to deploy medium-range American missiles in Europe and on FRG territory is, in essence, the aiding of the United States in its preparations to conduct in the European theater a separate, independent war with the employment or without the employment of nuclear forces in the theater of war but without activating the American strategic nuclear forces deployed on U.S. territory.

It is felt that the elimination of the socialist system in one or several Warsaw Pact states (for the FRG, primarily the GDR) or the achieving by the NATO bloc of certain military-political advantages in the European theater of war could be the aims of such a "limited" war in Europe.

Being an active member of this bloc, the FRG in its militaristic preparations proceeds from the role assigned it and correspondingly plans the employment of its armed forces. The concept of "forward lines" (in the aim of concealing the aggressive intentions in the Western press it is called the concept of "forward defense") as worked out by the Bundeswehr command is a component part of the military doctrine.

The concept of "forward lines" is aimed at gaining time and space for the mobilization and strategic deployment of the Bundeswehr and the NATO Joint Armed Forces as well as for creating conditions for successfully carrying out the tasks of the first offensive operation. It envisages active offensive operations and an intentional escalation of the possible armed conflict in Europe up to the point of initiating an all-out nuclear war. The demands of this concept include the seizing of strategic initiative in the initial period of the war by anticipating the enemy in deploying men and equipment as well as the shifting of military operations to the territory of the socialist states. Consequently, this concept is oriented at a surprise attack prepared for thoroughly in peacetime. In terms of its political nature, it expresses the aggressive aspirations of the German revanchists and the NATO bloc as a whole.

Military operations, in the opinion of the West German specialists, could be commenced by powerful surprise attacks of large troop groupings for rapidly attaining the strategic goals. The enemy breakthrough into the rear areas of West Germany is considered inadmissible.

In the area of the organizational development of the armed forces, the doctrine envisages their balanced development as a component part of the NATO "Triad" (strategic nuclear forces, nuclear forces in the theater of war and the general purpose forces). The FRG, not having its own nuclear weapons, has always been in favor of strengthening the bloc's nuclear potential. For waging war it has created the most powerful armed forces of the European NATO countries with a total number of 495,000 men and including 12 divisions, over 3,900 tanks and 7,700 armored personnel carriers and infantry combat vehicles, around 550 combat aircraft and more than 170 ships of the basic classes. West German troops are 50 percent of the ground forces of the NATO Joint Armed Forces in Europe and in the ground air defense system, 30 percent in the air force and the FRG Navy comprises a predominant portion of the NATO navy in the Baltic. There have been the planned reequipping of the Bundeswehr with new weapons systems and the improving of the organizational and equipment structure.

The reorganization carried out in 1980 in the FRG ground and territorial troops was aimed at increasing combat readiness and the capabilities of the formations to conduct military operations using large masses of tanks, other armored equipment and antitank weapons as well as significantly increasing the capabilities of the territorial troops to defend the rear and ensure the freedom of maneuver for the units and subunits. The change in the structure of the ground forces, in addition, was also aimed at reducing the time for the mobilizational deployment of the Bundeswehr.

It is essential to point out that the bringing of the divisions up to the wartime TOE, as the West German press has announced, in commenting on the results of the conducted military exercises, should be completed by the end of the second day of mobilization and the operational deployment of the ground forces groupings in one or two days.

The number of trained reserves, according to the data of the "FRG White Book," is more than 3 million men (each year more than 100,000 reservists are trained) and this will make it possible to increase by several fold the fighting strength of the Bundeswehr through mobilization.

The nation's military-political leadership gives great attention to maintaining industry in a state of readiness to begin mass production of weapons and military equipment. One of the measures aimed at increasing the readiness of the production base is the broad manufacturing of weapons for delivery to their own troops and for export and the modernizing of existing combat equipment employing the basic plants for this. After the United States, Great Britain and France, the FRG is the largest weapons exporter.

FRG territory has been operationally equipped according to the infrastructure program and the NATO standards.

The Bundeswehr command considers that with the presence of the North Atlantic bloc and the coalition nature of a future war, the questions of strategy go beyond national limits and the leadership of a war under these conditions should be provided by the Supreme Command of the NATO Joint Armed Forces. Thus, an important aim in FRG military policy is: to change the balance of forces in Western Europe in favor of NATO and to achieve a leading position in this bloc

in the aim of using its combined might for restoring Germany to its prewar limits.

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U.S. CIVIL DEFENSE DEVELOPMENT, PROCEDURES DESCRIBED

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 6, Jun 83 (signed to press 16 Jun 83) pp 19-23

[Article by Lt Col V. Goncharov: "U.S. Civil Defense"]

[Text] In the system of the U.S. militaristic preparations for initiating a new war, an important role has been assigned to civil defense (CD) and this, as has been repeatedly stated by American officials, is inseparable from the solving of other military problems and should be viewed as an important component of them.

The military-political leadership of the United States, in allocating enormous financial means to the developing of the armed forces and to creating new lethal types of weapons, at the same time realizes what consequences might ensue from any adventure of theirs against the USSR and the other socialist nations. The U.S. ruling circles even in peacetime have carried out a range of measures aimed at protecting the human resources (along with the economic ones) as these are viewed as a most important strategic factor determining a state's military might.

From statements in the foreign press it follows that in the event of initiating a new war, victims among the civilian population will greatly exceed serviceman casualties. A small digression into history shows that out of the total number of persons killed during World War I (10 million persons) noncombatants were 500,000 (5 percent). During World War II, 55 million persons lost their lives and 48 percent were civilians. U. S. aggression in Korea killed 9.2 million, including 84 percent noncombatants. During the period of the dirty war of American imperialism in Vietnam, the ratio of losses between the civilian population and servicemen was already 10:1. In a possible conflict employing nuclear weapons, the number of victims among noncombatants is difficult to imagine (this can be seen from the bitter fate of Hiroshima and Nagasaki on which the first but far from advanced American atomic bombs were dropped). As foreign military specialists feel, an efficient CD system can significantly reduce these losses.

In accord with the existing legislation, Civil Defense in the United States is defined as preplanned and organized measures aimed at saving people and property under the conditions of military operations and also in peacetime natural disasters and catastrophies. In other words, it is designed to carry out a number

of tasks in protecting the population, ensuring the survival of the economy, as well as organizing and carrying out emergency rescue work in the strike areas. The American press has pointed out that the complexity of such measures requires their preplanning and execution even in peacetime. These, in particular, include: improving the system for managing the CD bodies, creating a broad network of shelters, working out plans to evacuate the population, broadening the communications and warning system, setting up radiation observation and dosimetric monitoring posts, training personnel for the CD bodies, instructing the public in methods of protection against weapons of mass destruction and so forth.

As a system of preliminary psychological influencing and the preparing of the public for actions under extreme conditions, U.S. Civil Defense began to develop in 1950 after the adopting of a federal law which defined its organizational structure and tasks. Responsibility for Civil Defense was entrusted to the Office of Civil Defense which was organized under the Department of Defense. Subsequently this was renamed the Civil Readiness Agency (CRA). In 1979, the CRA was removed from the Defense Department and on its basis the Federal Emergency Management Agency (FEMA) was established directly under the U.S. President. In addition to the CRA, the FEMA included the following federal agencies: for relief in natural disasters, readiness, firefighting and insurance. These changes, as was pointed out in the foreign press, show the further increased attention by the American administration to CD problems.

The FEMA, the basic tasks of which are to ensure the most efficient fulfillment of the national CD programs and to work out guidance documents for the state governments and local authorities for actions in an extreme situation, provides overall leadership over Civil Defense through the chiefs of staff of 10 CD districts. The district staff coordinates and directs the activities in the states comprising the district in the area of planning and implementing measures in the CD area and distributes the financial and material means allocated by the federal government between them. On this staff, in addition to the CD representatives of the states, are the agents of a number of government departments and large enterprises located on the district's territory.

In a state overall leadership over the activities of the CD bodies is carried out by the governor and immediate leadership by the state CD chief of staff. Local CD staffs have also been set up in the counties and largest population points. These have been given the basic task in conducting practical measures in the event of war, natural disasters, industrial and other catastrophies.

For ensuring continuous leadership of the civil defense measures on a federal scale during the period of combat operations, even during peacetime underground command posts (CP) have been built on the nation's territory for the staffs of all 10 CD districts. It is envisaged that the staff personnel as well as the representatives of a number of departments and agencies of the federal government will be located at them. In the opinion of American specialists, such CP ensure sufficient defense against the destructive factors of a nuclear explosion. Here there are 30-day stocks of food and other supplies, independent heating, water supply and other systems have been built, and communications centers installed for the FEMA leadership and the state CD staffs.

Along with the creating of underground CP for the district CD staffs, the United States in 1960 started building and equipping protected control posts (KP) for the state governments and CD staffs as well as the local authorities. As a rule, these are equipped underground areas of state institutions or public buildings and in individual instances, specially-built reinforced concrete structures.

In accord with the demands made on the protected KP, they should ensure anti-radiation defense, have food and water supplies for a minimum of 2 weeks, independent power supply sources, ventilating systems and communications and warning equipment. The control posts are designed not only for use in the event of nuclear war but also for directing emergency rescue operations in natural disasters as well as in the course of conducting various exercises for the CD subunits. At present, as has been stated in the foreign press, the United States has 1,140 protected KP. However, according to a statement by the FEMA leadership, only 1,020 of them meet the present-day requirements in terms of protection and the avilability of the essential equipment.

In the general range of measures to solve the question of protecting the public, up to the middle of the 1970's the main place had been given over to the creation and development of a nationwide network of protective structures, the basis of which was the fallout shelters. Here they proceeded from the view that a massed nuclear strike against U.S. territory would be made by surprise, and in this instance the public would have 10-15 minutes to take up their places in the shelters, since the remaining time of those 20-30 minutes during which the probable enemy's ICBM would reach U.S. territory would be used on detecting the missile launch and warning.

The creating of a system of fallout shelters was based on the principle of the maximum use of existing structures as well as suitable areas with their partial reequipping. This work has been carried out in the following areas: examining existing buildings and ones under construction in the aim of finding in them areas suitable for a fallout shelter; their marking (the putting up of special designating signs); the drawing up of contracts with the homeowners on the right to use them with the announcing of an emergency situation; studying the possibilities for creating stockpiles of food, water, medical and first aid equipment and dosimetric instruments in them. In addition, in individual areas of the nation, they established and studied natural caves, mines, tunnels and other underground works which could be equipped as shelters for the public.

Initially for the fallout shelters an attenuation factor of at least 100 was established for the radioactive radiation. But in actual terms it was impossible to select and equip the required number of shelters with such an indicator and this confronted the nation's CD leadership with a need to reduce the designated factor to 40. As a result, by the start of 1983, on U.S. territory there were around 250,000 suitable areas and of these 119,000 (for 120 million places) are considered fallout. Almost one-half of all the shelters are underground, including large basement areas, storage areas, tunnels, subways and so forth.

The fallout shelters, in the opinion of American specialists, have an essential shortcoming. They do not provide a reliable defense for the public against the effect of the shockwave. For this reason, for achieving greater security for those groups of the public which are to be left in order to keep operating the most important industrial enterprises, utilities and other services, in the cities and densely populated areas considered by the Pentagon strategists as the most probable objectives for enemy nuclear strikes, it is essential to have antinuclear shelters which are capable of providing secure protection both against the shockwave and against the effect of fallout, light radiation and fires.

For this purpose, American CD specialists have conducted a study on the most protected fallout shelters which after the corresponding modernization could be used as antinuclear shelters. As a result, it was considered possible to re-equip 57,000 fallout shelters with 23 million places.

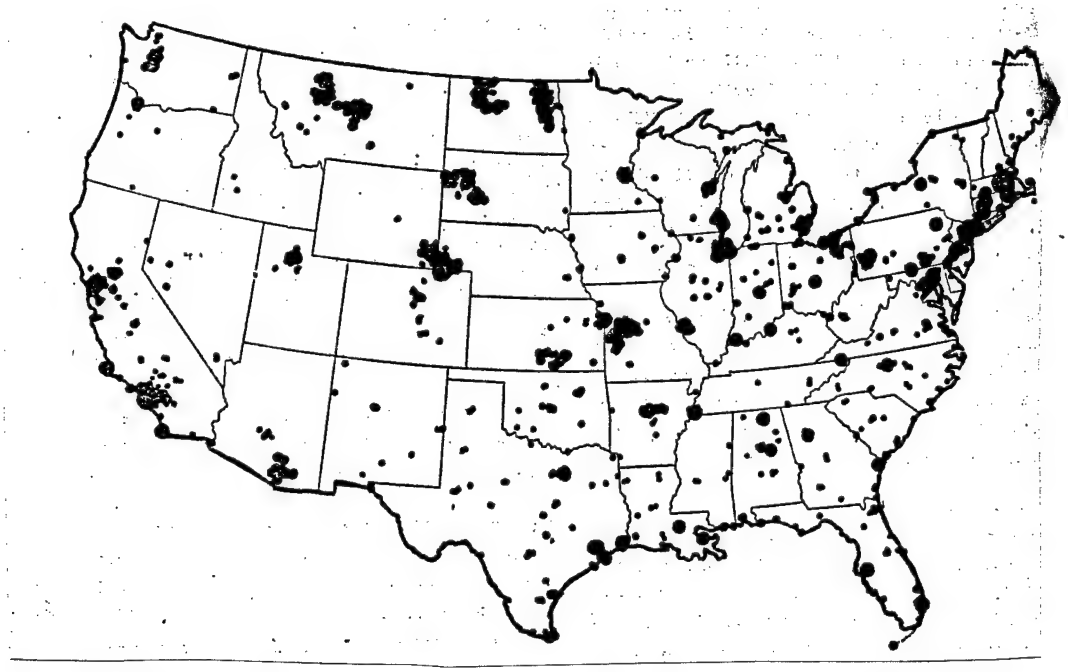
In viewing the shelters as the basic means of protecting human resources against weapons of mass destruction, the U.S. government and CD leadership from the middle of the 1970's has simultaneously begun to pay great attention to the questions of planning the evacuation of the public from areas which, in their opinion, could first be subjected to a nuclear missile attack. The reason for this has been the reassessing of the views of the American command on the initial period of an all-out nuclear war. At present, it proceeds from the premise that this period could be preceded by a stage of the escalating of international tension lasting several days and more and this is to be used for the evacuation.

Preference is presently given to this method of protecting the public chiefly out of financial considerations. Thus, according to a statement by one of the FEMA leaders, the cost of building antinuclear shelters for the entire population of the threatened areas would be 60 billion dollars, while almost 3-fold less money would be needed for an evacuation.

In the opinion of the American CD leadership, the evacuating of the public should not replace but rather complement the measures to protect it on the spot, primarily in the cities. As was pointed out above, an evacuation does not mean the complete shutting down of production and other activities. Certain categories of the population would be left in the cities or in direct proximity to them and at the moment of the attack these would be in the nuclear shelters and then participate in the emergency rescue and other work. The remaining inhabitants would be evacuated to areas and population points located, as a rule, in rural localities a significant distance away from military installations and large cities. A larger portion of the evacuees would be taken out by motor transport (predominantly in private cars). As was pointed out in the American press, the American CD specialists feel that the evacuation of the public could be completed in 3-7 days after the announcing of the presidential decision to carry it out.

According to the data in the foreign press, at present plans are being worked out to evacuate 400 threatened areas (see the diagram) which include the ICBM, strategic aviation and nuclear submarine bases, other important military installations, large military-industrial complexes and political centers as well

as cities with a population over 50,000 persons. FEMA intends to complete this work by the end of the 1980's.



Regions from Which the Public is to be Evacuated

In settling the questions of protecting the public under the conditions of an emergency situation, a particular role has been assigned to warning because the entire shelter system as well as evacuation can be truly effective only in the instance that the public is promptly warned on a possible enemy attack.

The United States has established a national CD warning system. It includes two national warning centers (in Colorado Springs and Olney) and the following posts: 10 in the CD districts, 50 basic and the same number of back-up ones in the states and more than 2,000 at individual government installations, as a rule, with around-the-clock operation. The immediate warning is provided using sirens.

For transmitting government announcements to the public even now there is in operation an emergency radio and TV broadcasting system and this includes around 3,000 radio broadcasting and TV stations. In addition, they also plan to widely use the ham radio system.

In the American CD system, a radiation observation and dosimetric monitoring system has been established and this consists of air and ground radiation reconnaissance. The latter has an extensive network of permanent posts located over the entire territory of the nation and equipped with the necessary dosimetric instruments. According to data in the American press, at present the United States has over 54,000 ground posts. A portion of these is at federal institutions and leading state bodies but a majority (over 80 percent) is at local administrative bodies, at industrial enterprises, at facilities of the

power supply, water supply and transport systems, as well as at police headquarters, firehouses and so forth.

For conducting air radiation reconnaissance they plan to use light aircraft from the volunteer public organization Civil Air Patrol. In the aim of equipping these, stockpiles of special air radiation reconnaissance instruments have been established at the state CD warehouses and at certain airfields and the personnel is being trained in operating them.

In wartime for conducting radiation reconnaissance they plan to also establish ground mobile posts. These will be employed, as a rule, in areas with low radiation levels and will provide more detailed information on fallout areas. The routes of the posts and points for measuring radiation levels can be planned ahead of time, even before the nuclear attack, or designated in accord with the developing situation.

Dosimetric monitoring while the public is in shelters will be carried out in the aim of establishing a radiation level at which it would be possible to leave the protective structures. There are around 700,000 various dosimetric instruments in the shelters for monitoring the sustained radiation doses.

In the opinion of the American leadership, another most acute problem is reducing vulnerability and ensuring the survival of the U.S. economy after a massed nuclear strike. Many corporations and firms, the planning sections of a number of government departments as well as various scientific research organizations are involved in working out these questions, in addition to the FEMA.

The basic government departments and agencies together with the FEMA are working out and disseminating manuals to organize civil defense in the most important industrial sectors. In particular, detailed instructions have been issued for the workers of the food, oil and gas, steel casting, electric power, chemical and related industrial sectors. Since the provisions of these manuals take the nature of recommendations, the industrial companies and individual enterprises accept the proposed CD measures proceeding from their capabilities and the developing situation.

In the postwar years the U.S. government has undertaken measures to reduce industrial vulnerability by decentralizing new industrial construction. For encouraging this the federal budget has set aside certain amounts of money, however in 1957, these were significantly cut back. Without being backed up by sufficient finances, the recommendations for dispersing industrial enterprises ceased being supported by the firms engaged in construction. In truth, in recent years there has been a certain tendency to build plants outside of large cities, but this is basically due to the overburdening of housing, transport and other service spheres.

The idea of creating underground enterprises has also been widely propagandized. A number of U.S. scientific research organizations studying the questions of reducing vulnerability and protecting the basic industrial sectors has worked out proposals to use caves, tunnels, abandoned mines and so forth for these purposes. It has been recommended that plants producing weapons, ammunition and military equipment, power plants, warehouses and oil storage capacity be the

first to be located underground. It is felt that for these purposes mining works and natural cavities are most suitable as well as lime and salt mines which have reduced humidity and a strong dome. The latter usually do not contain gases and are more often close to large administrative and industrial centers.

As follows from statements in the American press, one of the important areas for increasing the effectiveness of the CD system is the training of CD personnel and instructing the public in actions under emergency conditions.

The highest training institution for CD questions is the FEMA National Training Center in Emmitsburg, Maryland, and this includes a Civil Defense Institute and Firefighting Academy. The basic category of students in the institute is representatives of government bodies, the armed forces, commercial and industrial firms and enterprises, schools and so forth. Here also advanced training is provided for the employees of CD bodies in foreign states, including members of the NATO bloc.

As a whole, as follows from speeches by representatives of the FEMA leadership, the CD measures have assumed significant scope in the United States and they are carried out intensely and on a planned basis. Nevertheless in the American press more and more often voices are heard on the supposedly existing "enormous lag" in the given area behind the Soviet Union. Here, as always, the slogan of the supposed "Soviet military threat" figures in and various data are given on the losses in the civilian population which could occur with an all-out nuclear war. All of this is undertaken in the aim of frightening the American population, holding it in constant fear, as well as to convince the public of the "need" to assign additional allocations for improving the national armed forces and Civil Defense.

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STRENGTH, ORGANIZATION OF U.S. ARMY EXAMINED

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 6, Jun 83 (signed to press 16 Jun 83) pp 27-34

[Article by Col Yu. Viktorov: "The U.S. Ground Forces"]

[Text] Over the entire postwar period, the U.S. military-political course has been characterized by a drive for world domination and by a struggle against the forces of socialism, the national-liberation and democratic movement. The dictating of terms, the cult of force and intervention into the internal affairs of sovereign states have comprised and continue to comprise the basis of the expansionistic foreign policy of the U.S. administration, in endeavoring to alter the balance of forces on the international scene in its favor. This is also the aim of the new military strategy which the Pentagon terms the strategy of "direct confrontation" with the USSR. Its basic content is the use of military force by the United States as the chief means of achieving its global goals. Here the armed forces have been given the task to be ready for immediate combat operations in any regions of the world which may be declared as a sphere of U.S. "vital interests."

General provisions. In accord with the U.S. Constitution, the president is the supreme commander-in-chief of the armed forces (they include the Ground Forces (Army), Air Force and Navy). The president exercises leadership over them through the Secretary of Defense and the Joint Chiefs of Staff (JCS) with the direct involvement of the National Security Council. At the head of the Army, Air Force and Navy are secretaries appointed by the president from civilians for a period of 4 years.

In terms of specific purpose and the nature of the tasks carried out, the U.S. Armed Forces are divided into strategic forces, general purpose forces, strategic ferrying forces and equipment and reserves. As the foreign military press has stated, the ground forces are one of the basic components in the general purpose forces. These are designed to conduct combat operations, chiefly offensive ones, independently or in cooperation with the navy and air force, both in limited wars as well as in an all-out war with or without the use of weapons of mass destruction. In giving priority to joint actions of the armed services, American military specialists at the same time emphasize that only the ground forces are capable of closing with the enemy and destroying it in combat and an operation, to seize and hold vitally important regions, lines

of communications, supply bases, military and industrial installations or defend areas which are of strategic significance.

According to the division adopted in the U.S. Armed Forces, the Ground Forces consist of the regular army and reserve components. In organizational terms these are broken down into army corps, divisions, separate brigades and armored cavalry regiments, battalions and companies. Within them are also groups of "special purpose" troops, guided missile and SAM battalions, artillery battalions and batteries, as well as other different-purpose units and subunits.

American military specialists consider an army corps as the highest tactical formation. Ordinarily it includes two-four divisions of which one or two are armored ones. The basic tactical formation is the division. At present, the U.S. Army has infantry, mechanized, armored, airborne and air assault divisions with the number of personnel, depending upon type, being 16,000-19,000 men (the quantity of basic weaponry is shown in the table).

Number of Personnel and Amount of Basic Weapons in U.S. Ground Forces Divisions

Type of Divisions	Personnel, Men	Tanks	Field Artillery Pieces and Mortars	Antitank Weapons	Air Defense Weapons	Army Air Helicopters
Infantry	17,988	54	209	413	116	218
Mechanized	18,042	252	178	278	115	146
Armored	18,297	360	173	233	120	146
Airborne	16,371	54	174	392	112	218
Air Assault	18,926	--	192	499	110	402

The regular army comprises the basis of the ground forces. Its units and formations, according to announcements in the foreign press, are in a high degree of combat readiness. The effective combat strength includes 16 divisions (4 infantry, 6 mechanized, 4 armored, 1 airborne and 1 air assault), 3 separate armored cavalry regiments, 6 separate brigades, 3 groups of "special purpose" troops, 4 battalions of Pershing-1 guided missiles and 8 battalions of Lance guided missiles. The number of personnel is 791,000 men.

The largest grouping of regular ground forces which has been created on the continental United States which has 3 army staffs, 3 army corps staffs, 10 divisions, 5 separate brigades, a separate armored cavalry regiment as well as units and subunits of combat and rear support. It is designed to reinforce American troops on overseas territories. A significant troop contingent (over 220,000 men) is in the European zone as part of the NATO Ground Forces in the Central European Theater of War (the Central Army Group), approximately 30,000 men are in South Korea, around 3,000 in Japan and around 20,000 on the Hawaiian Islands.

The reserve components are designed for rapidly augmenting the ground forces with the start of the mobilizational deployment of the armed forces. The American military press has emphasized that these are divided into organized and unorganized reserves.

The former includes the reserve formations, units and subunits of the army and the ground forces of the National Guard which have the same organization as regular troops. The army reserve (over 250,000 men) directly under the secretary of the army includes 19 staffs of reserve commands, 12 training divisions, 3 separate brigades as well as units and subunits of combat and rear support. The National Guard (over 600,000 men) is the basis for the deployment of the ground forces. It has prepared and trained formations and units (8 divisions, 22 separate brigades, 4 separate armored cavalry regiments and support subunits) which are maintained in each state and in peacetime are under the governor. Contact with the secretary of the army is maintained through the National Guard Bureau which is part of the army staff. With the declaration of a national emergency, the National Guard formations and units become part of the regular ground forces.

The basis of the unorganized reserve is made up of persons who have served the stipulated time in the regular army and reserve but are still on military registration. With mobilization they can be used to man up the subunits and units.

As a total, judging from data in the foreign press, the ground forces are armed with: 144 launchers of the Pershing-1 guided missiles and 48 Lance missiles, more than 12,000 tanks, around 12,000 field artillery pieces and mortars, up to 17,000 launchers of antitank guided missiles, around 1,300 antiaircraft missile complexes and up to 8,600 army air helicopters and aircraft, including 700 fire support helicopters armed with TOW antitank missiles.

Composition of the armed forces. In accord with the existing organization, they are divided into branches of troops and services. The former include the units and subunits which carry out combat tasks (infantry, armored troops, field and antiaircraft artillery) or combat support tasks (engineer and chemical troops, signal troops, troop reconnaissance and military policy). In the latter are the units and subunits which perform tasks of rear and special support (artillery-technical, transport, paymaster, medical, adjutant general, quartermaster, military priests and judge advocate). The engineer and chemical troops, the signal troops and military police are viewed by the American command both as branches of troops and as services.

The infantry is a branch of troops designed for conducting close combat. Its basic task on the offensive is to close with the enemy and destroy it or take it prisoner, and on the defensive to halt the advancing enemy troops, to prevent them from capturing important areas or lines and to destroy them with fire. The infantry can operate independently or as part of all-arms tactical groups (company or battalion). It carries out its combat tasks combining fire and maneuver and making maximum use of the TOE weapons and combat equipment for carrying them out.

The armored troops are used chiefly for conducting highly maneuverable offensive combat operations under the conditions of employing both conventional

weapons and weapons of mass destruction. They are capable of conducting rapid attacks, splitting the groupings and destroying enemy troops, conducting reconnaissance, providing security and antitank defense in the interests of the other branches of troops.

Field artillery is the basic branch of troops providing fire support. It includes conventional artillery and guided missiles used by brigades, separate battalions and artillery battalions of the divisions. Field artillery can neutralize enemy weapons in the battle formations of the enemy troops, carry out remote minelaying on the terrain as well as support the combat operations of the subunits, units and formations by setting up smokescreens or illuminating the terrain.

Antiaircraft artillery provides air defense for the troops in the course of combat operations. In organizational terms it is represented by the TOE battalions of the divisions and by separate subunits having self-propelled antiaircraft mounts and guided missiles.

The engineer troops should support the combat operations of the basic branches of troops by conducting engineer reconnaissance, carrying out construction, destruction, camouflage, topogeodetic and other jobs in the interests of the advancing or defending formations, units and subunits. These include the TOE engineer subunits of the divisions, separate brigades and regiments, the separate engineer formations, units and subunits formed on the corps level as well as the separate special purpose subunits.

The chemical troops carry out tasks in detecting the enemy's use of nuclear, biological and chemical weapons, they organize the protection of the units and subunits against weapons of mass destruction, they conduct the special decontaminating of the personnel, weapons and military equipment and participate in the setting of smokescreens.

The signal troops provide the all-arms formations and headquarters bodies with all types of communications and conduct reconnaissance using equipment, they provide the radio electronic neutralizing of enemy command and communications equipment and are responsible for determining the needs of the ground forces for communications equipment and supplies, their allocation, storage and repair.

The military intelligence units and subunits participate in combat operations as a component part of the tactical groups. They provide all levels of commanders with the necessary intelligence data and also conduct counterintelligence activities.

The military police is entrusted with the tasks of supervising the movement of troop columns and individual servicemen, ensuring security on the lines of communications, organizing and providing security and defense for important installations, keeping and evacuating prisoners of war and interned civilians as well as maintaining order in the military garrisons and troop dispositions.

Army aviation is not considered by American specialists as an independent branch of troops or service. Nevertheless it plays an important role in ensuring the mobility of the ground forces on the battlefield, in conducting

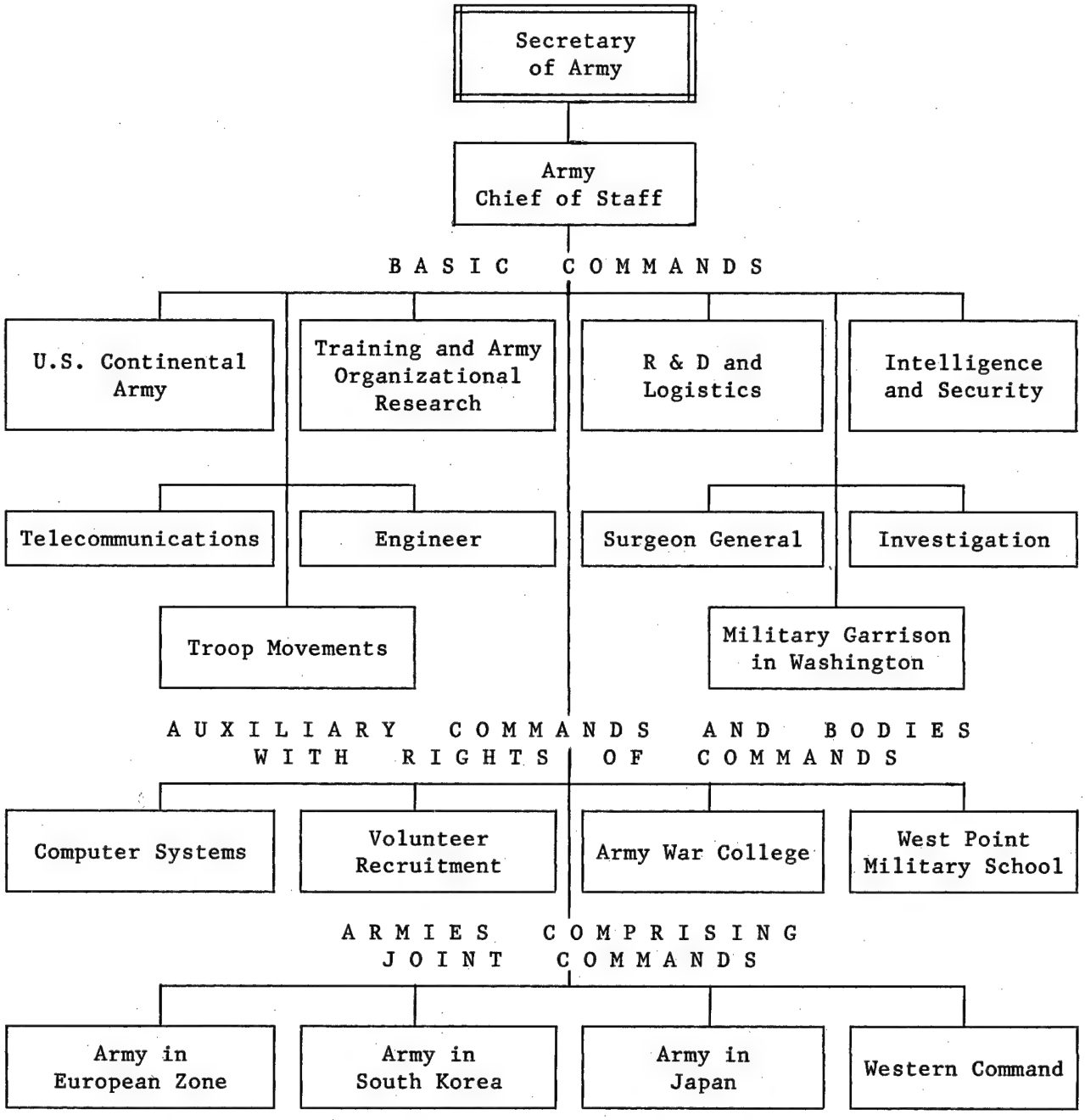
reconnaissance and ECM, in combating armored targets and in organizing liaison and troop control.

Superior command bodies. The superior command body of the ground forces is the Department of the Army headed by a secretary. Through its personnel and the army staff, it directs the organizational development, manning and mobilization deployment of the ground forces, and bears responsibility for their combat training, logistics as well as scientific research in the area of the organizational structure, weaponry and military equipment and the combat employment of the ground forces. The staff of the secretary includes: a deputy, four assistants (for rear services, military organizational development and finances, personnel and reserves, scientific research and experimental designing and procurement and for work in the area of civil construction), a general legal consultant, liaison departments with the legislative bodies and other organizations.

The army staff is considered the basic body of the secretary in control and command of the ground forces. It is headed by a chief of staff who organizes and directs the work of the superior command bodies of the ground forces and is also the chief military advisor of the secretaries of defense and the army on the questions of organizational development, combat and mobilizational readiness and the employment of the ground forces. The chief of staff, as a member of the JCS, bears responsibility for the elaboration of policy in the area of the organizational development and planning the use of the ground forces. He has a first deputy, four deputies (for personnel, operations questions and planning, rear services, scientific research, experimental design and procurement) and an intelligence assistant with the corresponding agencies and departments. In addition, the army staff includes a number of departments and services (judge advocate, paymaster, military priests, the National Guard Bureau and others).

The organizational structure of the ground forces. As has been stated by the foreign press, the organizational structure of the ground forces is represented by the basic commands (the ground forces in the continental United States, training and scientific research on the organizational development of the ground forces, research and development and logistics, intelligence and security, telecommunications, engineer, medical support, inspector and military transport), by auxiliary commands (computer systems and volunteer recruitment) and by bodies with the rights of commands (the Army War College and the Military School at West Point). There are also the army commands in the European Zone, in South Korea, Japan and the Hawaiian Islands (Western) and these are included as part of the joint commands of the U.S. Armed Forces in these regions of the world (see the diagram).

The U.S. Continental Army Command carries out the following functions: the operational and combat training of the formations and units in the regular army and reserve located on the nation's territory and in the zone of Central and South America; leadership over the formations, units and subunits from the U.S. Armed Forces Ready Troop Command which are to be used for increasing the already existing groupings of American ground forces in the theaters of war or deploying new ones; control over the maintaining of their combat and mobilizational readiness. Certain army formations and units in the continental United States are designed to be part of the new Central Command of the U.S. Armed



Organizational Structure of U.S. Army

States are designed to be part of the new Central Command of the U.S. Armed Forces (CENTCOM).*

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* For more detail see: ZARUBEZHNOYE VOYENNOYE OBOZRENIYE, No 3, 1983, pp 9-10. --Editors.

Leadership over the reserve units and subunits and the monitoring of the combat readiness of the ground forces in the National Guard is carried out by the command through three army staffs (the territorial military districts which are divided into nine readiness areas the staffs of which bear direct responsibility for the mobilizational and combat readiness of the assigned reserve subunits).

Moreover, it is also responsible for the planning and organizing of defense on the continental United States, including the providing of aid to the authorities in organizing civil defense, combating disorders and so forth.

The Training and Army Organizational Research Command is responsible for working out the principles of the combat employment of the ground forces as a whole and the branches of troops and services, for the TOE structure of the formations, units and subunits and the demands on the weapons systems, for the organization and management of basic military training and the training of recruits, the training and retraining of personnel in training centers and schools of the branches of troops and services, for working out textbooks, for exercising supervision over the quality of instruction in reserve officer training corps under civilian institutions of learning. Directly under the staff of the command are 3 specialized scientific research centers, 29 training centers and schools of the branches of troops and services, 9 training centers for the training of recruits, 4 regional centers for reserve officer training under civilian institutions of learning as well as a number of other bodies and institutions.

The R & D and Logistics Command is responsible for providing the ground forces with all types of weapons, combat equipment, ammunition and other military supplies (with the exception of food, fuels and lubricants, clothing and the supply of which has been entrusted to the logistics agency of the Defense Department). It is responsible for their development, testing, procurement, delivery and technical servicing in the troops, including repairs. It has at its disposal laboratories, arsenals, testing ranges, repair plants and dumps and private companies and firms are widely involved in its work (under contract). The staff directs the activities of 11 special commands for types of weapons. The command has over 130,000 men a majority of whom are civilian employees.

The Intelligence and Security Command brings together the individual units and subunits of military, communications and radar intelligence which are not part of the corps and divisions, both in the continental United States and on overseas territories. In organizational terms it consists of a staff, military intelligence groups and the army security service, military intelligence and ECM groups. The command staff on a centralized basis directs the collection, processing and reproducing of data received from the subordinate units and subunits. For this, it has operating around-the-clock an intelligence data analysis and processing center.

The U.S. Army Command in the European Zone is a component part of the Joint U. S. Armed Forces Command in Europe and is the largest of the army groupings deployed abroad. It includes the V and VII Army Corps (armored and mechanized divisions in each), four separate brigades, two separate armored cavalry regiments, a brigade of Pershing-1 guided missiles and units and subunits for combat

and rear support. As a total there are around 150 Pershing-1 and Lance guided missile launchers, over 3,300 tanks, 2,500 field artillery pieces and mortars, more than 5,000 antitank guided missile launchers and 1,00 helicopters. The American Command, in the event of necessity, can plan on the reinforcing of its troops in this area by ferrying formations and units from the continental United States to Western Europe. As has been stated in the foreign military press, at present in the interests of reducing the time for ferrying American troops, here they have stockpiled weapons for 4 divisions and construction of dumps is underway designed to store weapons and combat equipment for another 2 divisions.

The commander of this command is directly under the commander-in-chief of the Joint U.S. Armed Forces Command in Europe and in peacetime is responsible for the combat readiness, combat training and overall leadership of the troops available to him as well as their logistics. In wartime, all the formations and units subordinate to him shift to the corresponding command levels of the NATO Joint Armed Forces. The questions of the manning of the troops, the supply of weapons and combat equipment, logistical and administrative support are settled by the commander directly with the staff and the secretary of the army.

The Army in South Korea (around 30,000 men) is part of the Joint American-South Korean Command which is headed by an American general who is simultaneously the commander of the U.S. Army in South Korea. This includes the staff of the 8th Army, the 2d Infantry Division as well as units and subunits of combat and rear support.

The Army in Japan is represented by a corps staff and by rear subunits (up to 3,000 men) with the basic task of the latter being to service American installations in Japan. American military specialists feel that in the event of necessity, a larger troop grouping could be deployed on the basis of them. In organizational terms, the ground forces are part of the Joint U.S. Armed Forces Command in the Pacific Zone.

The Western Command is a part of the U.S. Armed Forces in the Pacific Zone and is stationed in the Hawaiian Islands. It includes the 25th Infantry Division and units and subunits of combat and rear support (a total of around 20,000 men). As has been pointed out in the American military press, the basic purpose of the grouping is to reinforce the U.S. Army in South Korea.

The training and manning system. The ground forces, like the armed forces as a whole, starting in 1973, have been manned on a volunteer basis. U.S. citizens who are physically and mentally fit as well as persons of foreign origin who have received official permission for permanent residence in the United States (from 17 to 35 years of age) are accepted for active military service. At least a 9th-grade education for men and a secondary education for women are an essential condition for acceptance for military service.

The regular army utilizes an extraterritorial principle for manning, while the reserve components use a territorial one. The questions of manning are the concern of the assistant secretary of the army for manpower and reserves. This determines the manpower requirements of the army, it works out annual plans for

the enlistment of volunteers and through subordinate organizations organizes their recruitment, selection and registration for military service.

Candidates considered fit must take a military oath. The day of signing the text of the oath and a contract (with a minimum term of 3 years) is considered to be the day of beginning military service. After this, the recruits go to training centers for a training course which consists of basic military training and basic specialty training (lasting 8 weeks each).

The personnel which has undergone the recruit training and assigned to units and subunits, in the process of undergoing service periodically receives advanced training in the military specialty. In the aim of improving the skills or acquiring a new specialty the enlisted men and NCO's can undergo training in courses at training centers and schools of the branches of troops and services. Recently as an experiment the Army Command, judging from statements in the foreign press, has been forming subunits of the company level using servicemen from the same recruitment year and they serve in one subunit for the entire minimum period of the contract. In the opinion of foreign specialists this should help to increase the teamwork and combat effectiveness of the subunits.

Officer personnel for the Army is trained at the military school at West Point, the officer candidate schools and the reserve officer training courses under civilian institutions of learning. In addition, a portion of the officers is recruited from among the warrant officers and senior sergeants who have served at least 8 years and have passed special qualifying exams as well as from civilian specialists (physicians, lawyers, engineers, priests and so forth) the education and professional experience of whom make it possible to employ them in the armed forces. The system of officer professional training, after obtaining the first officer rank, includes a specialization course and subsequently an advanced training course for command and staff personnel at a command-staff college and the training of higher army command personnel.

Development prospects. In assigning the army an important role in the overall system of measures to achieve military supremacy over the Soviet Union, the U.S. military-political leadership in the 1980's has planned its reorganization under the Army-90 Program. In accord with this, the TOE structure of the existing divisions and army corps is to be changed, they are to be equipped with new weapons and combat equipment and the views on the methods of the combat employment of the formations and units are to be revised.

In particular, in a mechanized division there are to be: three brigade staffs; five tank battalions (four companies each with 14 M1 Abrams tanks, a total of 58 tanks in each) and five motorized infantry ones; a combined artillery battalion including a MLRS battery (nine launchers) and two batteries of 203.2-mm howitzers (eight guns each); three battalions of 155-mm howitzers (24 guns in each); a brigade of army aviation consisting of two battalions of antitank helicopters, a battalion of general support helicopters and a reconnaissance battalion.

The new organization of an armored division will differ from a mechanized on in the ratio of combat battalions (six tank and four motorized infantry). An infantry division is to be made fully motorized and aeromobile for rapid ferrying to distant theaters of war.

The strikepower of the ground forces is to be increased primarily by modernizing the tank fleet and by a quantitative increase and qualitative improvement in the antitank weapons and organic air defense. The foreign military press has stated that at present the troops are receiving the new M1 Abrams tanks, the M2 Bradley infantry combat vehicles and modernized TOW antitank missiles which are also to be provided to the army air helicopters. Work is being done to develop more effective means for combating armored targets (the Hellfire antitank guided missile) and development of the MLRS has been completed. The Assault Breaker reconnaissance-assault complex is being developed. The air defense capabilities of the formations and units are to be increased by equipping the troops with new types of Patriot and Roland SAM, the M988 (Sergeant York) self-propelled antiaircraft mount and portable Stinger air defense missiles.

In addition, fire power is to be increased by increasing the number and improving the combat capabilities of the field artillery pieces and mortars as well as by the planned deployment of the new Pershing-2 guided missiles in Western Europe.

Great attention is to be given to improving the integrated automated control and communications, reconnaissance and target designation equipment.

The American Command is also searching for the optimum methods for employing the growing combat capabilities of the ground forces and this has been reflected in the new field manual for conducting combat operations. Along with the newly introduced concept of operational art, it also examines a so-called "air-ground operation." Its essence, in the opinion of the American military specialists, consists in a decisive defeat of the opposing enemy by site-, time- and task-coordinated actions by the army and tactical aviation to the entire depth of the enemy battle formations (operational configuration). For defeating the enemy, all types of weapons are to be employed, including nuclear and chemical, ECM and raids are to be made by the "special purpose" troops deep in the enemy rear.

10272
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ENGLISH PTARMIGAN COMMUNICATIONS SYSTEM DESCRIBED

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 6, Jun 83 (signed to press 16 Jun 83) pp 34-37

[Article by Col G. Kucher: "The English Ptarmigan Communications System"]

[Text] A new English tactical communications system, the Ptarmigan, is used for providing secure automated communications encompassing all the army command elements (stationary and mobile) and their cooperation with the air force. Its subscribers are the staffs of the army, the corps, divisions, brigades, separate units as well as the mobile subunits in the area of combat operations. The basic feature of the Ptarmigan system is the extensive use of microwave links instead of wire ones and this achieves the required mobility. In deployment the system encompasses chiefly the tactical zone of combat operations, covering it with a grid of district centers located a safe distance away from the command posts and interconnected by radio relay links.

For connecting to the network of the command posts, the individual stationary and mobile subscribers, input switchboards are used as well as single-channel access radios and terminals for subscribers in the radio network of the forward units and subunits. A schematic diagram for Ptarmigan communications is shown in Fig. 1. All the switching and channel-forming equipment is mounted on cross-country vehicles. According to announcements in the foreign press, the high maneuverability of the system's elements makes it possible to respond rather quickly to troop requests in accord with a change in the combat situation.

Under normal conditions (medium-rugged terrain) in the disposition of an army corps there are around 20 district communications centers to which the control posts of the corps, divisions and other units are connected through the input switchboards. As was pointed out in the foreign press, the Ptarmigan system which was developed by the English Plessey firm is capable of providing the following:

a) Secure telephone, telegraph and phototelegraph communications as well as data transmission at a rate of at least 16 kilobits per second;

b) Automatic search for and connecting of subscribers under conditions of their frequent moving and change in network configuration;

c) Sufficient reliability and stability of communications even with significant disruptions in network links by employing automatic search for alternate channels;

d) The freedom of moving the mobile subscribers without the threat of losing communication;

e) Connecting with any subscriber by agreement for an extended time;

f) Direct automatic connecting of subscribers with ordinary dialing of number using number dialer;

g) Priority for superior command and possibility of holding conference calls and circular transmissions.

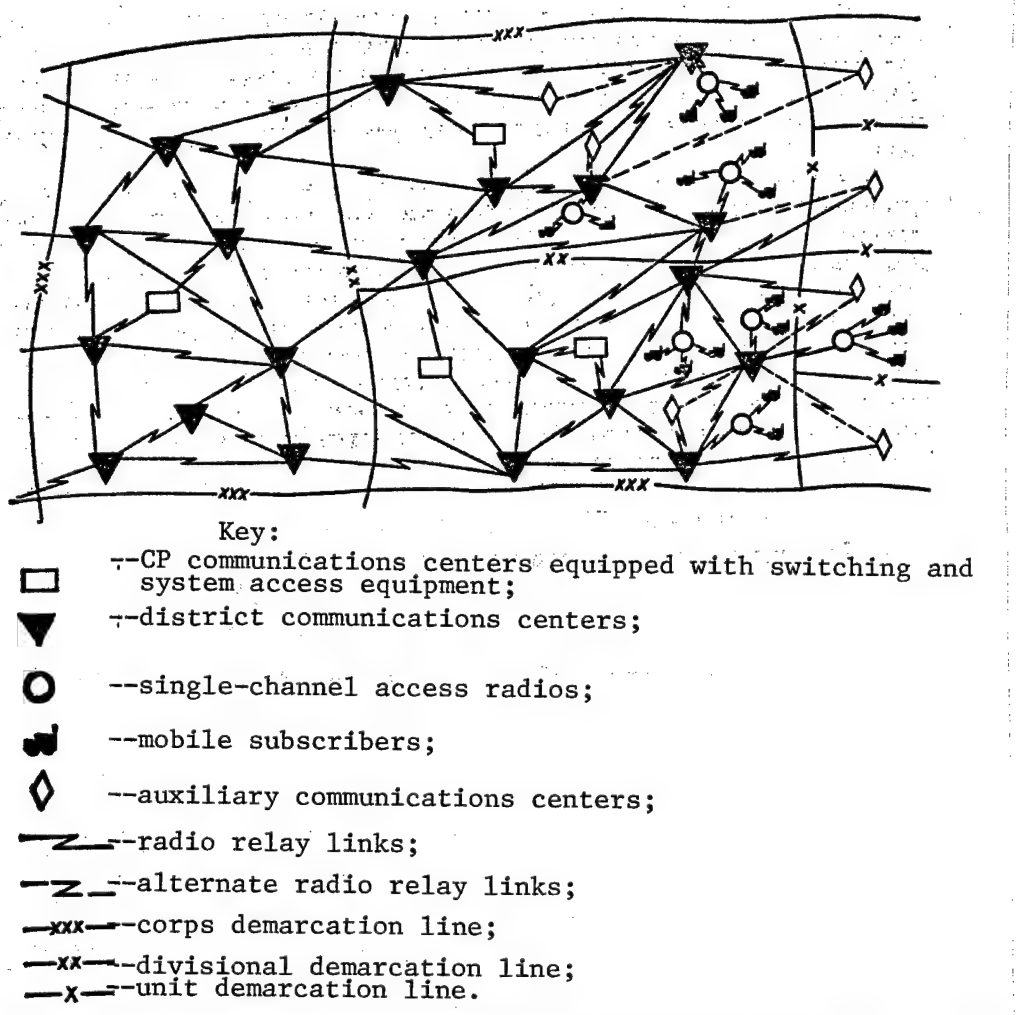

Fig. 1. Diagram of Ptarmigan Communications System

Control of the system as a whole and the switching centers in particular is achieved using two processors of a Plessey S-250 electronic computer. Ptarmigan has two subsystems: information planning and for changing the network configuration. The first provides the collecting of information on the shifting of command posts and the moving of system elements as a consequence of a change in troop positions, the processing of this information and the incorporating of the obtained results in the communications plan. Using the second subsystem, a new configuration of the network is planned and control is ensured over the deployment of the system's basic elements. Both of them which are connected to the computer memory are mounted on special command vehicles.

The Ptarmigan system is based on the district communications centers installed in the covered bodies of motor vehicles. The positioning of the elements of one of these (except the communications equipment) is shown in Fig. 2 [not reproduced]. Each center, in addition to the switching equipment, is provided with equipment for storing and distributing telegraph information and this provides the necessary transformation of the rates and codes of its transmission depending upon what terminal equipment the recipient has. It processes information with a maximum possible size of a telegraph message of 10,000 digits. The average telegraph size should not exceed 600 digits. The maximum speed of transmission is 810 digits in 2 minutes or 900 messages an hour.

All the telegrams should be drawn up in accord with the general NATO standard ACP127 which strictly regulates the beginning and end of the message. The beginning and end groups of the telegram (the service part) contain information on the sender, the recipient or the list of recipients, information on delivery priority and the degree of secrecy. In the event of the detecting of an error in one of these service groups, the message is returned to the sender for correction. After rectification the telegram goes for transmission to the recipient. If there is no confirmation that it has been delivered, its transmission is repeated up to three times at fixed intervals.

Delays in messages are recorded and stored according to the established procedure. After three unsuccessful repetitions, the telegram is reported to an operator who should determine whether it should be sent back for a repeat transmission cycle, sent to the deferred delivery category or destroyed. If it goes to the deferred delivery category, it will be transmitted for 6 hours with an interval of 30 minutes. After this, a telegram which has not been delivered to the recipient is destroyed and the sender is immediately notified of this. The equipment for accumulating and distributing telegraph information makes it possible to store up to 600 messages which are being returned for correction and up to 200 which have not been delivered to the destination.

Each of the district centers where the communications channels are distributed has up to 15 channel groups with a capacity of 16 or 32 channels each and serves around 350 subscribers, one-half of which can be mobile. Additionally, it can receive three communications links from civilian agencies. In addition, the district center provides compatibility in the connecting of NATO communications systems (strategic and operational-tactical) and the radio networks of the forward units and subunits.

The input switchboards which connect the subscribers to the system are a component part of the command posts and are located together with them. They also provide the switching of one subscriber to another within a single command post. The switchboards by two independent radio relay links are connected to two different district centers.

The most closed groups of subscribers (up to 15 or 31) use local switchboards which consist of a small-capacity switchboard connected to the input switchboard by a radio relay or wire link.

An important feature of Ptarmigan, as has been pointed out in the foreign press, is its capacity to provide stable communications with mobile subscribers, including those beyond the front line. For this, the system has a special single-channel access radio (SCAR) to which any mobile subscribers can link up if they are equipped with the appropriate radios (Fig. 3) [not reproduced]. The SCAR serves up to 25 mobile subscribers. All its equipment is located in a standard container transported by a 4-ton vehicle. It includes: radio relay equipment for the decimeter and centimeter bands, a switchboard and a high frequency cable which connects the SCAR to the district center over a distance of up to 2 km.

The radio relay equipment can be deployed a distance of up to 250 m from the vehicle. Communications between the SCAR and the radios of the mobile subscribers is provided by two identical 6-channel transceivers. Information is transmitted from the SCAR on one frequency and received on another, higher frequency. The radio equipment of the mobile subscribers, in using rod antennas can contact a SCAR while up to 15 km away. In addition to the basic equipment carried on motor vehicles, they also have remote extension devices which can operate up to 10 m from the vehicle as well as remote control equipment making it possible to control the extensions while also a distance of 10 m away.

The key Ptarmigan elements--the district centers and other component parts--are interconnected by radio relay lines with areas up to 30 km in extent. For broadening the system's capabilities, it also uses two types of channel-forming equipment and these encompass the decimeter and centimeter frequency bands. The equipment is mounted on special platforms which are carried in motor vehicles.

The decimeter-band radio, the UK/TRC-471 (Fig. 4) [not reproduced] is the basic one (it is known as the Triffid). It is operated in three subbands: 250-400 megahertz, 610-960 megahertz and 1,350-1,850 megahertz. All these are broken down into spot frequencies with an interval of 0.125 megahertz. Thus, the first subband has 1,400 spot frequencies, the second has 2,800 and the third 4,000. Using a built-in device for monitoring the technical state of the radio, the operator in a short period of time can detect a malfunction. This is basically eliminated by replacing the damaged unit, requiring around 10 minutes. More difficult jobs are performed in a special mobile repair shop.

The centimeter-band radio provides communications in frequencies from 4.4 to 5 gigahertz.

Both types of equipment form duplex communications channels operating with a message transmission rate of 256 or 512 kilobits per second. These are used for the communications of the district centers. For communications between the elements of the centers themselves, for example, the switchboard with the radio relay equipment, channels are employed having a transmission rate of 2,048 megabits per second.

Ptarmigan utilizes the CCT-1148 high-speed telegraph. The microprocessor used in it can operate with the ITA5 and ITA5 telegraph codes at speeds of from 50 to 2,400 bauds. The printer is a needle-impact [?dot-matrix] mechanism (with a speed of 120 signs a second). The device is equipped with a memory having a capacity of 4,000 or 12,000 signs. It is produced in three versions: automatic receiving and transmitting, only automatic receiving and receiving and transmitting by keyboard.

According to announcements in the foreign press, all the links in the system are equipped with scramblers. The keys of the cryptographic devices are set electronically.

The short time for setting up and taking down Ptarmigan, combined with the reduced number of personnel operating it and the small amount of communications equipment at the command posts, as has been pointed out by foreign military specialists, make it possible to increase their mobility and thereby improve the efficiency of troop control and command. The organizing of the system in the form of a grid with the placing of the district centers a certain distance away from the command posts, in their opinion, ensures its sufficient survival and continuity of the troop control process even under the conditions of exposure to enemy fire. Up to 1984 they plan to deliver 84 sets of the new Ptarmigan system to the British Army.

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WEST GERMAN TPZ-1 ARMORED PERSONNEL CARRIER REVIEWED

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 6, Jun 83 (signed to press 16 Jun 83) pp 37-42

[Article by Candidate of Technical Sciences, Docent, Engr-Col N. Mishin: "The West German TPz-1 Armored Personnel Carrier"]

[Text] After the founding of the Bundeswehr, for 20 years the FRG Army was armed only with tracked armored personnel carriers [APC] purchased from other nations or produced by West German firms under foreign licenses. At the same time, in the first half of the 1960's, as the foreign press has stated, the FRG began research on defining the tactical and technical requirements for the following generation of combat and transport vehicles. Considering the presence of the dense network of good roads and the abundance of rivers and canals in the Central European Theater of War and the rather high development level of the automotive industry in the nation, as well as analyzing the merits and shortcomings of vehicles with wheeled and tracked propulsion systems, the West German specialists concluded that the tracked vehicles must be replaced by a series of wheeled amphibious armored ones, including APC the designs of which should widely employ units and assemblies from serially produced vehicles.

The FRG Ministry of Defense in 1964 turned over to West German firms the tactical and technical requirements on future amphibious armored vehicles with a wheel configuration of 8 x 8, 6 x 6 and 4 x 4. Four years later, plant testing started on the prototypes of all three vehicles developed in accord with the given requirements and in 1968-1970 their improved versions underwent testing at West German ranges and in the troops. After this it was decided to create the prototypes of combat reconnaissance vehicles (a wheeled configuration of 8 x 8) and this was commissioned in 1975 and known as the Lux* and an armored personnel carrier or Transportpanzer-1 (abbreviated TPz-1, 6 x 6) but for now has refused the operational development of the TPz-2 APC 4 x 4).

Upon completing the testing and the operational development of the prototypes of the TPz-1 APC, the Bundeswehr leadership at the end of 1976 decided to introduce it into the army. A year later, around 600 million West German marks were

* For a detailed description of the Lux APC see: ZARUBEZHNOYE VOYENNOYE OBOZRENIYE, No 10, 1977, pp 39-44.--Editors.

allocated for purchasing up to 1,000 such vehicles. The first serially produced TPz-1 APC designed to transport infantry and named the Fux were received by the troops in 1979. Each year, the West German firms produce approximately 160 such vehicles in different models for the Bundeswehr. Its specifications are given below.

Combat weight, tons	16
Crew (infantry), men	2 (10)
Dimensions, meters:	
Length	6.76
Width	2.98
Height	2.3
Clearance, meters	0.45
Power of diesel engine, hp	320
Maximum speed, km per hour:	
On highway	87
On water	10
Range, km	800

The APC Fux has a bearing hull welded from steel plate the thickness and angles of which provide protection against small-arms bullets as well as fragments of shells and mines. In the front of the hull is the driving compartment, behind it the engine-transmission one and in the middle and rear parts the personnel-cargo compartment (Fig. 1) [not reproduced].

In the driving compartment located ahead of the front set of wheels are located the driver's seat (on the left side) as well as the seat of the vehicle's commander and the controls. Ordinarily access to this is through side doors, however in the roof of the hull above both seats are also circular hatches the tops of which, as a rule, are open when the APC is operating amphibiously. In order to avoid the splashing of water into the driving compartment, on the front plate of the hull there is a splashboard which can be controlled from within the vehicle. The seats and controls for convenience of the driver's work have settings for changing their position. A large bullet-proof windshield (equipped with three wide-sweep windshield wipers), the windows in the side doors and the rear mirror provide the driver and commander with good visibility. When necessary, all the windows can be covered by armored shields (without the crew leaving the vehicle) and in this instance the driver observes through a periscope mounted in the roof and this at night can be replaced by a passive infrared one.

In the engine-transmission compartment, assembled into a single power unit is an OM 402A V-8 turbocharged, liquid-cooled diesel engine (piston displacement of 12.76 liters, power 320 hp at 2,500 rpm), a 6-speed automatic transmission with a torque converter, a generator with a power of 5 kilowatts, filters and certain other auxiliary elements. As has been pointed out in the foreign press, the assembled power pack can be rather quickly installed and removed from the vehicle through the large rectangular hatch in the hull roof. This is achieved by using a significant number of quickly-broken electrical (just one multipin plug), mechanical and hydraulic connections equipped also with devices for automatically covering the ends of pipelines without fluid loss. The replacing of the entire assembly requires around 30 minutes.

The power unit and two protected fuel tanks (with a total capacity of 430 liters) are separated from the remaining interior of the vehicle by armored partitions. The engine and transmission compartment is equipped with an automatic fire-extinguishing system.

The personnel-cargo compartment (length 3.2 m, floor width 1.42 m, height 1.25 m) is designed to carry ten soldiers with their weapons or cargo weighing up to 2 tons (if water barriers are not to be crossed amphibiously, then up to 4 tons). The seats for the infantry are located in two rows (five along each side). Located in niches and on shelves are the radio equipment, four 12-volt storage batteries, equipment for the air heating system as well as a filter ventilating unit designed to create an overpressure of purified air in the vehicle in operating under the conditions of the use of weapons of mass destruction.

Access to the compartment is provided through a large (1.35 x 1.25 m) double door in the rear armor plate as well as by one circule and two rectangular hatches in the hull roof. In addition, it is possible to get from here into the driving compartment through a passageway along the right side. With closed hatches and doors, the infantrymen observe the terrain using glass vision blocks with one each in the right and left side plates of the hull and in the right side of the rear door. There are no firing slits and for this reason the infantry can fire their small arms only by opening the upper hatches or dismounting from the vehicle.

In using the APC in transporting cargo, the seats of the infantrymen are folded up against the sides, forming a usable volume of the compartment equal to almost 6 m^3. For accelerating and facilitating the processes of loading and unloading through the rear door, it is possible to lay a roller table on the floor of the cargo department as well as set up a crane for dropping cargo into the compartment through the upper hatches.

Outside on the right side of the hull there are two shovels, a bow saw, wire cutters and a towing bar and on the left side a pick, an axe, a hammer, a towing cable, a camouflage net as well as six launchers for firing smoke grenades at a range of up to 60 m. These are employed in setting smokescreens in those instances when unloading (loading) must be carried out under enemy fire. The basic weapon of the APC is a 7.62-mm machine gun located over the commander's hatch. It is also possible to use a 20-mm automatic cannon (mounted on a turret assembly above the central hatch) or a Milan antitank guided missile.

The undercarriage and the controls of the Fux APC basically consist of units, assemblies and parts from the serially produced West German 5- and 10-ton second-generation vehicles and the Lux APC. All three axles are driving, undivided and planetary wheel reduction gears. The wheel suspension employs helical springs and hydraulic double-action shock absorbers, with the dynamic travel of the wheels equaling 290 mm. The two forward pairs of wheels are steerable, their turning angle reaches 42° and here the turning radius is 8.5 m. The steering has a servomechanism and a hydraulic actuator. The brake system includes a double-line hydropneumatic system, a hand parking brake and a device for connecting to the brake system of a towed trailer. The wheels have radial tires (14.00 x 20, an air pressure of 4.75 kg per cm^2). For

improving off-road capability, the pressure in the tires can be reduced to 2 kg per cm^2, however here its speed should not exceed 20 km per hour.

As has been pointed out in the foreign press, the Fux APC does not require special preparation for crossing water barriers (it can cross rivers the current speed of which is up to 2 m per second). Locomotion and control in water are provided by two four-blade propellers located in recesses in the back of the hull and having a separate (not dependent upon the wheels) cardan drive. The propeller axles can be turned to any angle (up to 360°) in the horizontal plane and this provides the APC with good turnability in the water.

Movement in the water, as a rule, is controlled by the commander who stands in the hatch (Fig. 2) [not reproduced]. By turning the axles of both propellers to the right or left using the control of a double-step hydraulic drive, he himself sets the direction while speed is determined by giving commands to change the engine speed to the driver. The latter can judge the direction from the indicator on the control panel showing the position of the propeller axles. For removing water which has fallen into the APC, there are three bilge pumps with a capacity of 180 liters per minute each and three drain (check) valves which after the APC has come out on land are opened automatically under the weight of the water.

In the estimate of foreign experts, the Fux APC is one of the best wheeled armored vehicles created recently in the West. Its design to a maximum degree has considered both the military as well as the anthropotechnical requirements (ensuring the rather protracted work of the driver without a substantial increase in fatigue). The maximum speed of the APC over highways and in water is 1.5-fold higher than the corresponding performance of the American tracked M113 armored personnel carrier which is the most widespread in the Bundeswehr and in the armies of many other capitalist states, while the range is 2.5-fold more.

The approximately even distribution of the combat weight over the three axles (5,250 + 5,250 + 5,400 kg), the high clearance, the interlocking of the axle and interaxle differentials and the use of wide-tread tires with a special protector have made it possible for the Fux APC to cross ascents with a grade up to 30°, vertical obstacles up to 0.6 m high and trenches about 1.7 m wide, having brought its off-road performance close to the corresponding indicator of tracked vehicles. Due to this, as has been pointed out in the foreign press, it can be used in cooperation with the Leopard tanks, the Marder combat infantry vehicle and special vehicles based on them.

Judging from announcements in the foreign press, the Bundeswehr command, in considering the rather high performance of the APC, has decided to employ it basically as a basis for developing special purpose vehicles. In particular, of the purchased TPz-1 APC, around 110 will be equipped with the French Razit moving ground target reconnaissance radar and with its aid a person can be detected at a range up to 14 km and a motor vehicle (tank) up to 20 km. For ensuring concealed observation of the enemy, the antenna and a portion of the radar equipment have been mounted on a platform which with the aid of three telescopic jacks can be raised to a height of up to 1.8 m (Fig. 3) [not reproduced]. When necessary the radar equipment (four air-tight units weighing less

than 30 kg each) can be taken off the vehicle and placed directly on the ground for use and here the antenna is set up on a tripod. Nine such vehicles are to be delivered to each radar reconnaissance company in the reconnaissance battalions of the 11 West German divisions in order to replace the exiting 80 obsolete Hotchkiss tracked APC and the 44 0.25-ton vehicles which presently carry the Razit radar.

More than 170 APC are to be equipped with ECM equipment (Fig. 4) [not reproduced]. A diesel generator had to be installed for driving the powerful radio electronic equipment. A distinguishing feature of the given vehicle is the presence of a large number of antennas. Each ECM Company of a division should receive 14 such vehicles while a small number will be sent to the training subunits and to the reserve.

Around 140 TPz-1 are to be manufactured as radiation and chemical reconnaissance vehicles (Fig. 5) [not reproduced]. They are already being delivered to the battalions for defense against weapons of mass destruction in the army corps. Each battalion will have 18 such vehicles. The crew, without leaving the vehicle, can determine the radiation levels on the terrain and analyze outside air as well as put the corresonding indicator markers in the ground. The forward part of the hull has an additional armored addition.

The foreign press has announced that the antiaircraft missile regiments with the Roland-2 antiaircraft missiles and the antiaircraft artillery regiments with the Gepard self-propelled antiaircraft mounts will each receive eight observation and command vehicles developed on the basis of the TPz-1.

More than 200 APC are to be produced as engineer vehicles. These will be sent into the engineer companies of the brigades.

West German specialists have also worked out other models of the TPz-1: command-staff, ambulance and transport vehicles, a mobile radio communications center and a self-propelled antiaircraft mount. It would also be used as the basis for a minelayer. In 1980, the Krauss-Maffei firm on its own initiative developed a four-axle (8 x 8) model of the given APC which has been lengthened by 1.5 m. The capacity of the personnel compartment has been increased up to 14 persons. A 20- or 30-mm automatic cannon has been mounted as the basic weapon in the armored turret.

As a whole, in the opinion of the Bundeswehr command, the commissioning of the TPz-1 APC and the special vehicles developed on its base will make it possible to increase the mobility of the corresponding units and subunits of the army. It has been pointed out that in the future it will be possible to modernize the APC, particularly by equipping it with more powerful weapons as well as using its wheel base for developing different-purpose new vehicles.

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MULTIPURPOSE HELICOPTER MISSILE SYSTEM DESCRIBED

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 6, Jun 83 (signed to press 16 Jun 83) pp 41-42

[Article by Engr-Maj V. Nedelin: "A Multipurpose Helicopter Missile System"]

[Text] As has been announced in the foreign press, starting from the end of the 1970's, the NATO countries have been conducting research to protect helicopters not only against enemy ground air defense weapons but also enemy helicopters and aircraft. For carrying out this task, along with developing tactical procedures for countering them, the corresponding weapons systems have been developed using air-to-air guided missiles and designed to combat chiefly enemy helicopters. Aside from protecting the helicopters, these can also be used as additional active weapons for troop air defense.

The most significant work in the given area is presently being conducted in the United States, and such weapons systems are basically being developed on the basis of portable antiaircraft guided missiles. In particular, the American firm General Dynamics is developing a light-weight multipurpose missile system or MLMS which can be installed on a helicopter. Initially it will be employed for defense against enemy helicopters and later for combating air defense ground weapons. As the guided air-to-air missile, they intend to use the Stinger SAM in use in the ground forces and having an infrared [IR] homing head (HH) or a new modification of this missile which is being developed and has an advanced POST (passive optical seeker technique) homing head. This, according to information in the foreign press, operates in the IR and ultraviolet spectrum bands and possesses increased resistance to interference and resolution.

During the current year, after completing the modernization of the Stinger missile, General Dynamics intends to begin developing its modified version or ADSM (air defense suppression missile) designed to combat troop self-propelled air defense weapons. This missile is to be supplied with an advanced shaped-charge warhead and a double-system (radar and infrared) homing head. This homing head is a modified POST homing head operating in two IR spectrum bands and has a passive radio-frequency receiver of the superheterodyne type. The ADSM missile is initially aimed at the threatening radio emission source and on the terminal leg switches to guidance using the IR HH.

All three modifications of the Stinger missile will have approximately the same weight (on the order of 10 km), but the ADSM will be somewhat longer. Maximum firing range of the missiles is around 4,000 m. The launcher is being developed in two models, with two or four launch tubes.

As a sight, the pilot will use a gyroscopic or collimator sight. The appearance of a background noise in the earphones shows the locking on of the target by the missile head. In the course of flight testing (on AH-1G and OH-58A helicopters) for the sight and homing heads of the missiles, as was pointed out in the foreign press, good results were obtained for the locking on and tracking of targets flying at maximum high altitudes.

At present, General Dynamics is developing a single dual-purpose air-to-air and air-to-ground (for neutralizing troop air defenses) based on the Stinger.

Initially the MLMS system is to be utilized on the OH-58C Caiova or UH-60 Black Hawk helicopters and later on a modernized version of the former being developed under the AHIP Program.

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ROLE, EQUIPMENT OF PAKISTANI AIR FORCE REVIEWED

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 6, Jun 83 (signed to press 16 Jun 83) pp 43-49

[Article by Lt Col (Res) S. Myachkov: "The Pakistani Air Force"]

[Text] The military dictatorship of Zia-ul-Haq, in being encouraged and supported by the United States and a number of other states, is intensifying the nation's militarization, justifying this by the instability of the situation in the region. Military expenditures, the size and effective fighting strength of the armed forces are being increased, the scale of measures relating to the operational equipping of the territory is being broadened, the production volume of military products is increasing and the ideological conditioning of the population and servicemen is being intensified. Within these measures aimed at strengthening the nation's armed forces, an important place has been assigned to the Air Force.

The U.S. government, in being interested in making Pakistan an obedient weapon of its aggressive policy in the region and a staging area for the American Rapid Deployment Forces, has provided the Zia-ul-Haq regime with diverse aid in its military preparations.

As has been announced in the foreign press, the Air Force began to be established immediately after the declaration of Pakistani independence in July 1947. The basis of it was two squadrons of the former British India Air Force which were armed with a certain number of obsolete, largely unusable English Hawker FB2 fighter bombers and Dakota military transports. Up to 1954, Great Britain helped Pakistan in organizing its Air Force by supplying aviation equipment, by providing assistance in training flight personnel and by sending instructors and advisers into the nation.

After the conclusion of the Pakistani-American agreement "On Mutual Ensuring of Security" in May 1954, the United States became the main weapons supplier for Pakistan. It exported combat and transport aircraft, helicopters, airborne and ground radar, navigation and communications equipment, aviation ammunition and also helped in deploying the Air Force logistical system and organized training for flight personnel and ground specialists. Prior to 1961, all of this was done under a military assistance program and later on credit. From 1965, the Pakistani leadership began to search for new sources for obtaining weapons for its armed forces. Since them, and up to 1981, the Pakistani Air Force has

received around 90 French Mirage fighters (Fig. 1) [not reproduced] of various types and approximately 300 Chinese-produced F-6 fighters (Fig. 2) [not reproduced] and these became the basis of its aircraft fleet. As the Western press has stated, Pakistan has also received weapons and military equipment from other states.

Below, using data published in the foreign press, we have taken up the organization, effective combat strength, air defense, personnel training and development prospects of the Pakistani Air Force.

Organization and effective combat strength. The Air Force is an independent armed service. It includes the following branches of aviation: bomber, fighter, reconnaissance, transport and auxiliary.

The leadership of the Air Force is provided by a commander through a staff (he is also its chief) located in the city of Peshawar.

As has been pointed out in the Western press, the Pakistani Air Force is designed to carry out the following basic tasks: combating an air enemy in the aim of winning air supremacy; providing direct air support for the ground forces and partially the navy; air defense for vitally important military-industrial installations, administrative-political centers and troop groupings; conducting air reconnaissance; supporting the landing (dropping) of airborne troops; ferrying cargo and personnel by aid.

An air base is considered to be a tactical formation of the Pakistani Air Force. It includes all the units and subunits based at its airfield and nearby. As a rule, this is an air wing, the individual squadrons and detachments, as well as communications and maintenance units. The air wing, in turn, includes from two to four air squadrons. The combat squadrons are usually armed with one type of aircraft, the number of which varies from 12 to 30. The effective combat strength, the numbering and location of the formations and units are given in the table while the location of the basic air bases and other air force installations is shown in Fig. 3.

As a total the Air Force has over 400 aircraft (including 234 combat and over 60 combat training) and 18,000 personnel, with 8,000 in the reserve. However, as the foreign press has pointed out, up to the present many aircraft are obsolete. Moreover, a majority of them has a small range of operation and can carry out tasks in the tactical depth of the enemy combat formations. Only the B-57B bombers and the Mirage-3 and -5 tactical fighters are capable of striking targets located a significant distance away. At the same time, it has been pointed out that in comparison with the military aviation of the United States and the Western European states, the Pakistani Air Force suffers from an acute shortage of modern aviation weapons.

Air defense. As was pointed out above, this task is entrusted to the Air Force and a most important component of it is the air defense forces and weapons. The latter are directed by the air defense commander through his staff.

According to data in the foreign press, the air defense zones which were established here previously in 1970 were transformed into three sectors which cover

Effective Combat Strength of Pakistani Air Force

Formations, Units and Subunits	Aircraft (helicopters)		Air Base
	Number	Type	
Sargodha Air Base			
33d Air Wing:			Sargodha
5th fbas [fighter air squadron]	15	Mirage-3E & D[2]	
17th tas [1]	16	F-6	
23d tas	16	F-6	
25th tas	24	F-6	
Training air detachment	24	Mirage-3E, Mirage-5 & F-6	
Communications and support detachment	·	T-33A, HH-43	
Rafiki Air Base			
34th Air Wing:			Shorkot
9th fbas	16	Mirage-5, Mirage-3-D	
11th tas	16	F-6	
20th ras [reconnaissance air squadron]	12	Mirage-3R	
33d tas	16	Mirage-5	
Mesrur Air Base			
31st Air Wing:			Mesrur
7th fbas	13	B-57B & RB-57	
32d Air Wing:			
18th Combat Training Squadron	16	F-86F	
Air observaton and communications detachment	22	T-33A & RT-33	
Mianwali Air Base			
14th tas	30	F-6	Mianwali
1st Combat Training Squadron	20	FT-5	
Training squadron	25	FT-5	
Peshawar Air Base			
36th Air Wing:			Peshawar
15th tas	16	F-6	
26th fbas	20	F-86	
Islamabad Air Base			
35th Air Wing:			Islamabad
3d tras [transport air squadron]	6	C-130H	
6th tras	6	C-130H	
	1	Falcon	
	1	F-27	
Air Flight School	50	T-37	Risalpur
	25	MFI-17	

[1] Tactical fighter air squadrons (tas); their crews are trained for operations both as fighter bombers and as air defense fighters.

[2] To the names of all versions of the aircraft in the Mirage family in use in the Pakistani Air Force they often add the letter P, for example, the Mirage-3E is called the Mirage-3EP.

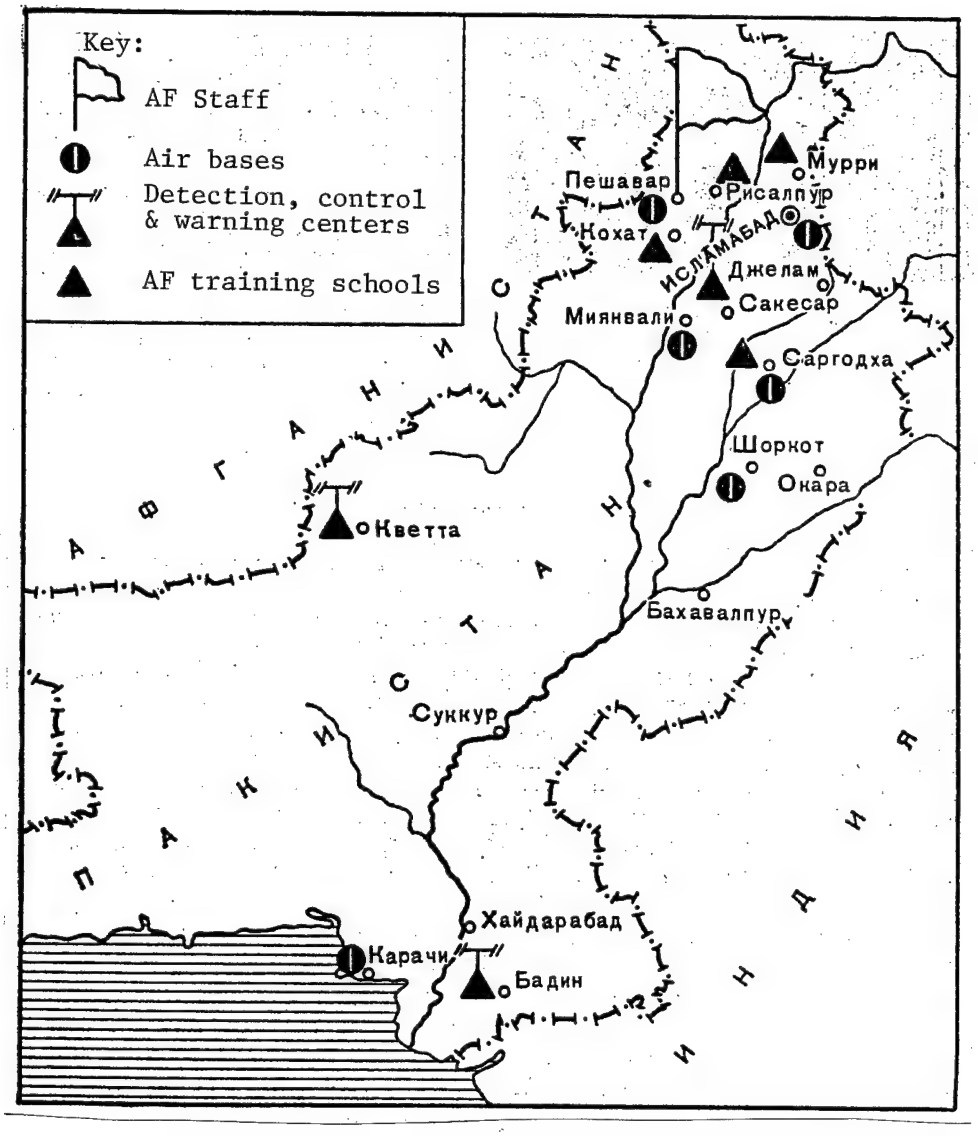

Fig. 3. Basic Air Bases and Other Installations of the Pakistani Air Force

the entire territory of the nation. Due to the lack of men and weapons, air defense is clustered around individual installations. Here the main efforts are concentrated on defending the administrative, political and economic centers, the air and naval bases, the nuclear industry installations and major troop groupings. The air defense is based on fighter aviation, antiaircraft missile complexes, antiaircraft artillery and radar subunits.

However, the Air Force does not possess fighters specially designed for intercepting air targets. In the event of necessity, the F-6, Mirage-3E and partially the F-86 tactical fighters can be used for carrying out this task. For equipping the fighters with air-to-air guided missiles, in the 1960's 70 Matra R-530 guided missiles were purchased in France, and in thhe 1970's 60 Magique R-550 missiles. The fighters of the Mirage family have been armed with them.

In addition, in 1974, 450 AIM-9B Sidewinder guided missiles were purchased in the United States (these were used on the F-86 fighters and partially on the F-6 and Mirage-5 airplanes). In considering that the given type of missiles have an insufficient range of fire, Pakistani specialists have begun to modernize them (this is done at the enterprises of the air facility in Kamra). In 1980, 350 AIM-9J Sidewinder guided missiles were purchased in the United States.

As foreign military experts have pointed out, the Pakistani fighter aviation has limited capability in intercepting enemy aircraft flying at great altitudes and at night. The first they back up by the fact that only the Mirage-3E fighters armed with the R-530 Matra guided missiles can actually operate against high-altitude targets (the range of fire of the missile is 30-35 km), and the second by the fact that a larger portion of the fighters (chiefly their sight equipment and onboard weapons) is adapted only for daylight operations.

The antiaircraft missile weapons in the national air defense system are represented predominantly by the French Crotal antiaircraft missile complexes. In accord with a contract signed in 1973, France has delivered to Pakistan 6 batteries of these missiles (a battery has 3 launchers with 4 tracks each). These antiaircraft missile complexes are designed to hit low-flying air targets. They are all used for air defense at the basic air bases.

Judging from announcements in the foreign press, the Pakistani Air Force has a certain number of Chinese-produced CSA-1 antiaircraft missile complexes and is supposedly expecting the delivery of a new batch. These are to be used in batteries (with 6 launchers in each) for air defense of the major air bases, command posts and other important installations.

The antiaircraft artillery (AA) is also considered among the active air defense weapons. In organizational terms its units and subunits are part of the Army, however, they are used according to the plans of the air defense commander.

An antiaircraft artillery regiment is the basic tactical AA unit. Depending upon the nature of the artillery systems employed, the regiments are divided into light and medium. As has been asserted in certain foreign press organs, a light antiaircraft artillery regiment (guns with a caliber up to 40 mm) consists of 4 batteries with 12 guns in each.

The antiaircraft artillery units are armed with the following: 94-mm English antiaircraft cannons (175 units have been delivered and their maximum range for altitude is 9,000 m), 87- and 57-mm antiaircraft cannons of Chinese production (these can be employed to combat air targets at altitudes up to 10,000 and 6,000 m, respectively), 40-mm American and Swedish artillery systems (a total of 240 guns and mounts of various models has been received, including 30 self-propelled; for hitting targets at altitudes up to 3,000 m), 37- (500 units have been received) and 23-mm Chinese coupled and quadruple antiaircraft mounts (for combating low-flying air targets).

In addition, the Pakistani Armed Forces have 14.5-mm coupled antiaircraft machine guns (around 300) and 14.5-mm quadruple ones (260).

In the estimate of foreign military experts, the antiaircraft artillery is an important means of air defense for permanent installations and troops.

The radar cover for the nation's territory is provided by four detection, command and warning centers (three of them are located in Sakesar, Quetta and Badin) and several radar posts. Equipment for them has basically been received from Great Britain.

At present, with American aid an automated air defense command system is being created and for this they have purchased six AN/TPS-43 radars and other equipment.

Personnel training. The Air Force is manned on a volunteer basis, like the other armed services. Judging from announcements in the foreign press, regardless of the low secondary general educational level of the public, a large portion of the males who are unfit or are of limited fitness for military service and the increased number of skilled and highly educated citizens leaving to work abroad, the Air Force Command has not encountered any difficulties in manning the Air Force.

The officers entering the Air Force for service conclude a contract, as a rule, for a 10-year period, while enlisted and NCO personnel serve for 12 years. Subsequently, they can extend for the same period.

Basic military training for the enlisted personnel of the Air Force is provided for 6 months at the air school in Kohat. After this, those selected for serving as junior air specialists are trained here for another 7-9 months.

All persons selected for service as well as candidates for admission to the Air Force schools receive a higher military training in the preparatory air schools located at Lower-Topa (Murree) and Sargodha (6 months).

Officer personnel (flight and technical) is trained in special schools. Thus, pilots for all the air branches are trained for 1-1.5 year in a flight school in Risalpur. The officer candidates undergo flight training initially on the piston-driven trainers MFI-17 Mushak (total flying time for each should be at least 45 hours) and later on the jet T-37 (20 hours, Fig. 4) [not reproduced].

Basic and advanced flight training is organized at the Mianwali Air Base or in helicopter subunits depending upon the further career of the pilots. For flights, as a rule, they initially employ trainers which have characteristics close to the performance of combat aircraft or their two-seat models and later in those aircraft which the future officers will fly in line units. For example, the training of an F-6 fighter pilot in the first stage is carried out on a FT-5 trainer (accrued flying time of 90 hours) and the second stage on the F-6 (60 hours).

Officers of the air engineer service are trained at the air engineer college in Korangi (Karachi).

Personnel for the Pakistani Air Force is also trained in the military schools and centers of other states, chiefly those supplying aviation equipment (primarily the United States and France).

The Western press has commented on the rather high level of professional training for the Pakistani pilots. Precisely for this reason, many Arab nations have invited Pakistani pilots and specialists from the air engineer service to work as advisers and instructors as well as for serving under contract directly in the units and subunits of their air forces.

The Pakistani government in every possible way encourages the departure of its personnel overseas as this helps to strengthen Pakistani influence in these states, it provides the specialists with an opportunity to become acquainted with foreign combat equipment and increases foreign exchange earnings. According to data in the foreign press, in accord with a 1967 agreement, 310 servicemen from the Pakistani Air Force were sent to Saudi Arabia as advisers and specialists.

Development. In continuing to increase the combat might of the Air Force, the nation's leadership has relied basically on American financial and military aid as well as on aid from certain Western European and Near Eastern states.

As has already been announced in the foreign press, in 1981, an agreement was reached between Washington and Islamabad on providing Pakistan with military-economic aid totaling 3.2 billion dollars in 1982-1987. In accord with this, large batches of modern weapons and combat equipment are to be delivered for all the armed services, including 40 F-16 fighters. The first batch of F-16A fighters was turned over to the Pakistani Air Force at the end of 1982. They are expecting delivery of the Maverick air-to-ground guided missiles, the Rockeye antitank canister bombs, antipersonnel bombs and so forth.

In France 35 Mirage-5 tactical fighters, 18 Mirage-3 aircraft and other equipment have been ordered.

According to data in the foreign press, a final decision has not been made to purchase the A-7 Corsair ground attack plane and the C-130H military transports in the United States. Talks were also held on acquiring the modern Mirage-F1 and Mirage-2000 French fighters. It has been pointed out that as the modern combat aircraft are received, the obsolete, primarily the F-86 fighters and the B-57 light bombers will be decommissioned from the Air Force.

Along with this, the nation's military leadership is taking measures to modernize the existing aircraft by equipping them with modern onboard electronic equipment and the most efficient weapons systems. Thus, on the Mirage-3 fighters they are to install the LW-33 sight-navigation systems (of the French Litton firm) and heads-up data displays (Thomson-CSR). The F-6 fighters used in the Pakistani Air Force are to be supplied with equipment necessary for employing the American air-to-air Sidewinder guided missiles. Other work is also being carried out.

The modern aviation equipment is being purchased largely from money provided to the Zia-ul-Haq regime by the rich Arab countries in the Persian Gulf zone, primarily Saudi Arabia, Kuwait and the United Arab Emirates, in the form of loans, credits and gratis donations.

The continuing militarization of Pakistan, the forced increase in the combat might of the armed forces and the ever-closer allying of the country with the Western imperialist states, primarily the United States, have helped to strengthen the regime's aggressiveness and have led to a deterioration of relations with neighboring countries and as a whole to the exacerbating of the situation in the region.

10272
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MERITS, SHORTCOMINGS OF HELICOPTER AIR RECONNAISSANCE EXAMINED

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 6, Jun 83 (signed to press 16 Jun 83) pp 49-52

[Article by Candidate of Technical Sciences, Engr-Col L. Safronov: "Air Reconnaissance from Helicopters"]

[Text] In the aggressive actions being planned by the U.S. and NATO armed forces, an important role has been assigned to the conducting of all types of battlefield reconnaissance.

Air reconnaissance, the foreign press has pointed out, is one of the most important types of support for the combat operations of the air force, the ground forces and the navy. As a rule, its conducting is entrusted to specially trained reconnaissance air units, subunits and individual crews of the air force, army aviation and naval aviation. Manned aircraft and helicopters as well as unmanned aircraft are employed for carrying out air reconnaissance tasks. In evaluating the manned equipment, Western military specialists have pointed out that helicopters possess the following advantages over aircraft.

The possibility of taking off and landing the helicopters from limited fields (forest glades, city squares, ship decks and so forth) provides their basing virtually under the conditions of any terrain, in direct proximity to the disposition of the commanders and staffs for whom they are to conduct reconnaissance.

The helicopters can carry out the flights at much lower (than aircraft) and maximum low altitudes (up to 10-15 m above the ground surface or up to 1 m above the sea), they can maneuver rapidly in horizontal and vertical planes and in addition make better use of the terrain features for camouflage. All of this prevents the enemy from detecting them and consequently reduces their vulnerability to air defense weapons. In addition, slow-speed helicopter flights improve the observation conditions for the terrain and reconnoitered installations on it and thereby improves the reliability and detailing of the obtained data.

The ability of the helicopters to hover (to hang in one point of space) makes it possible to create special tracking systems from friendly territory for mobile enemy targets to the entire enemy tactical depth (for example, the

American SOTAS system*) as well as correct friendly artillery fire. This property of the helicopters is used for landing groups of ground scouts in the enemy rear and for evacuating them without landing as well as for organizing the observation of them from "ambushes."

In the event of the damage or accident involving helicopters, the level of their crew losses is significantly lower than in aircraft. According to data of the foreign press, with the falling of a helicopter at a speed up to 50 km per hours, the probability of the survival of its crew members is up to 95 percent.

Aside from those mentioned above, helicopters have one other essential advantage in the opinion of the foreign military specialists and this is the significant lower fuel consumption. For example, a light reconnaissance helicopter assumes approximately 10-fold less fuel than an aircraft capable of carrying the same set of reconnaissance equipment and conducting reconnaissance for the same time interval. However, reconnaissance helicopters also have certain negative qualities. In particular, in low altitude flights they are very vulnerable to the fire of short-range antiaircraft missile complexes and even small arms. In addition, their capabilities are sharply reduced with a deterioration of the meteorological conditions and at night.

According to the views of military experts in the member nations of the aggressive NATO bloc and other capitalist states, reconnaissance helicopters can be entrusted with the following basic tasks:

1) Detect the composition, battle formation and basic weapons (primarily nuclear), engineer works, control systems and other enemy installations in the tactical depth of its defenses;

2) Locate approaching columns of tank and mechanized units and establish observation of them;

3) Reconnoitering the planned areas for the landing of airborne forces, the assembly areas of air-dropped subunits, their routes of advance, terrain, camouflage conditions with the flight of transport-landing helicopters over enemy territory, the air defense system in the landing area and on the route and so forth;

4) Determining the forward edge of the enemy troop positions, the routes of advance of friendly troops, bridges, rubble and areas with increased ratiation levels;

5) Observing the flanks and gaps in the battle formations of friendly troops through which mobile enemy groups could penetrate;

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* For a detailed description of the SOTAS system, see: ZARUBEZHNOYE VOYENNOYE OBOZRENIYE, No 4, 1982, pp 40-42.--Editors.

6) Supporting ground reconnaissance and the guiding of its groups to designated objectives;

7) Correctly of artillery fire as well as guiding the attack helicopters of the ground forces and the tactical air aircraft to detected targets.

Involved in carrying out these tasks are the crews of both special reconnaissance as well as other helicopters including assault, search and rescue, multipurpose, for example, the American UH-60A Black Hawk (Fig. 1) [not reproduced] as well as transport helicopters. In taking up this question, the Western press has pointed out that the crews of all aircraft (including helicopters), in carrying out any combat mission, should conduct air reconnaissance as much as possible.

At present, the armed forces of the capitalist states are equipped with a large number of different-purpose helicopters with reconnaissance ones comprising a significant portion. Judging from statements in the foreign press, in the NATO countries the basic ones are the following: OH-6A Caius, OH-58A Caiova, SA341F Gazelle (Fig. 2) [not reproduced], the SA318F Alouette-2, the BO-105 and a number of others (the specifications of some are given in the table).

The crews of reconnaissance helicopters, in carrying out their mission, should operate covertly, without attracting enemy attention. But if this is not possible, if the enemy has detected them and the need has arisen of crossing its fire resistance, they can employ their own onboard weapons.

Abroad the basic methods of conducting air reconnaissance using helicopters are considered to be: visual observation, photographing (aerial photography) and reconnaissance using radio electronic equipment. The choice of these depends upon the nature of the task to be carried out, the reconnaissance equipment onboard, enemy resistance, the time of day and the meteorological conditions.

Visual observation is carried out with the naked eye or using optical devices and is considered one of the most dependable methods (particularly on the battlefield). For broadening its capabilities, the armed forces of the foreign nations employ various optical instruments (binoculars, colllimators) including those making it possible to see objects in the infrared spectrum. In preparing for a flight, the crew members of the reconnaissance helicopters carefully study the route of flight, the basic terrain markers and the distinguishing features of individual targets. The depth of observation (the range of detection) for the object depends upon the height of flight, the transparency of the atmosphere, the dimensions, nature and activities of the object as well as upon the degree of its camouflaging.

In particular, the foreign press has pointed out that the depth of observation for individual objects from a helicopter during the day with the aid of binoculars can reach 10-12 km. As was mentioned above, the effectiveness of this method to a large degree depends upon the time of day and air transparency (visibility) and for this reason it is employed most often during the day under favorable meteorological conditions. However, foreign military experts feel that in modern warfare, under the conditions of the great dynamicness of

Specifications of Certain Reconnaissance Helicopters

Designation, Name (manufacturing country)	Maximum helicopter lift-off weight (empty), kg Number x maximum shaft horsepower	Maximum (cruising) speed, km per hour Service ceiling, m (maximum flight range, km)	Length x width x height of fuselage (cargo hold), m Number of blades x diameter of main (tail) rotor, m	Basic versions of weapons and payload (maximum weight, kg)
OH-6A Caius (United States)	1225(560) 1x320	240(215) 4815(610)	7.0x1.6x2.5 (2.4x1.4x1.6) 4x8.0(2x1.3)	1x7.62-mm 6-barrel machine gun. 1x40-mm grenade launcher, 4 men (430)
OH-58A Caiova (United States)	1360(660) 1x320	220(190) 5760(490)	9.9x1.5x2.9 (2.1x1.3x1.3) 2x10.8(2x1.6)	1x7.62-mm 6-barrel machine gun, 4 men (450)
SA341F Gazelle (France)	1890(910) 1x590	310(260) 5000(670)	9.5x2.0x3.1 (2.2x1.3x1.2) 3x10.5(.x0.7)	2x7.62-mm machine gun 4 AS-11 ATGM 2 AS-12 ATGM 3 men (.)
SA318C Alouette-2 (France)	1650(890) 1x530	205(180) 3300(300)	9.8x2.4x2.8 3x10.2(2x1.9)	2-4 AS-11 ATGM, 3 men (.)

combat operations, daytime air reconnaissance must be supplemented by nighttime in order to ensure continuous observation of the enemy. But for this in the positions of the objects it is essential to create light markers and illuminate the terrain using air illuminating bombs, illuminating rockets and other equipment.

In order to ensure flight safety and improve the visibility of the terrain and objects on it during darkness, special electronic devices for the crew members are being developed and are beginning to be introduced on the reconnaissance helicopters. For example, the United States has developed the AN/PVS-5 helmet goggles based on a highly light-sensitive television system. Their optical field of vision is 40°. During flight testing using such glasses, the crew members of reconnaissance helicopters in flying at 30 m detected from 4 to 10 objects (armored equipment) of the 12 set up on the range. Here the average range of target detection was 430 m.

Photographing from helicopters is rather widely employed in the armed forces of the capitalist states. But here, as the Western military press indicates, they use chiefly oblique photographing as vertical is ineffective from low and maximum-low altitudes. The objects of photographing can be the most diverse targets located on the forward edge and in the tactical depth. Most often they propose employing helicopters for photographing the enemy defensive positions. It is recommended that the designated task (considering flight security considerations) be carried out from territory occupied by friendly troops. It has been noted that from altitudes of around 2,000 m a distance of 1-3 km from the front line, the depth of photographing enemy occupied terrain can reach 10 km and more. Here it is possible to detect troop battle formations, engineer equipping of the defensive zone, the command posts of the units and formations, weapons positions and other important objects.

In the opinion of foreign specialists, aerial photography surpasses other reconnaissance methods in terms of reliability as well as the volume and quality of the information. Among its drawbacks are the dependence of the image quality upon meteorological conditions and the state of the atmosphere, the difficulty of identifying camouflaged objects, the length of the process involved in the delivering of the photographic materials, their processing and interpretation as well as the necessity of using artificial illumination of the terrain for nighttime photographing.

Reconnaissance using radio electronic equipment (television, infrared and radar equipment as well as ELINT equipment).

As the foreign press has announced, air reconnaissance using television equipment is finding ever-wider use, as this ensures immediate transmitting of the image of the objects to the ground data collection and processing points. The range of steady transmission of TV signals can be 50 km and more. However, the image quality, as in aerial photography, depends greatly upon the meteorological conditions and atmospheric transparency. For this reason, in recent years abroad great attention has been given to developing highly sensitive reconnaissance TV devices or, as they are sometimes termed, television cameras operating with a low level of terrain illumination. Several models of such equipment have been developed and they have been supplied in significant numbers to aircraft, including helicopters.

Infrared reconnaissance systems have become widespread in the armed forces of the capitalist states. Certain helicopters use a forward-looking infrared system (FLIT) making it possible to detect and identify various targets from their thermal contrast against the background of the natural radiation of the earth's surface. There are also special scanning IR reconnaissance devices and other equipment. In the opinion of foreign military specialists, the use of IR equipment for conducting air reconnaissance, in comparison with visual observation and aerial photography, along with shortcomings possesses also definite advantages. Among the latter are the lower dependence upon the state of the atmosphere, the absence of limitations in nighttime use, the specific qualities of the obtained images making it possible to detect camouflaged and concealed objects as well as determine their condition (for example, the readiness of armored subunits for combat operations from the degree of engine warming of the tanks, armored personnel carriers and other equipment).

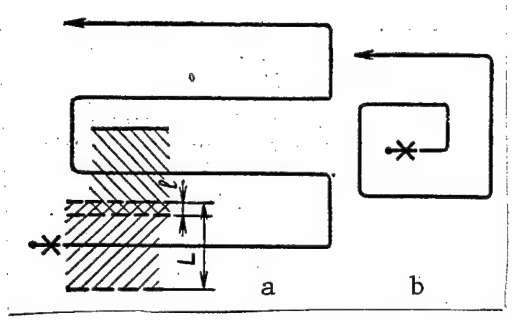

Fig. 3. Methods of locating targets in set area:
a--tacking (L--width of viewed strip of terrain, 1--the designated overlap;
b--Spreading square.

In the aim of achieving all-weather capacity and the possibility of conducting air reconnaissance to a great depth of the enemy battle formations, with the flying of helicopters over friendly territory, ever-wider use is being made of the onboard side-viewing radars.

Abroad much attention is being given to equipping the reconnaissance helicopters with radio reconnaissance and ELINT equipment. In the opinion of Western military experts, this equipment combined with the ground and onboard airplane equipment of analogous purpose will make it possible to more dependably detect the opposing enemy grouping, its command system and air defense.

As a whole, as the foreign press writes, the helicopter crews in correctly choosing the methods, equipment and tactical procedures, can successfully carry out both particular and general air reconnaissance missions against the enemy. As for the tactics of the reconnaissance helicopters, it has been pointed out that this depends upon the nature of the tasks to be performed and the situation under which reconnaissance is conducted. Considering these conditions, the helicopters can observe the enemy from a "ambush," in flying along a fixed route as well as by searching in a designated area. In the event of weak air defense resistance, it has been recommended that the latter be carried out by the two following methods: tacking and flying along a spreading square (Fig. 3) with the parameters depending upon the width of the viewed strip of terrain and the set overlap.

Ordinarily the air reconnaissance tasks are carried out by pairs of helicopters. One conducts the search and identifies the target while the other covers it. The flights are carried out, as a rule, at low and maximum-low altitudes using the terrain features, the forest edges and clearings. Thus, the helicopters fly hugging the ground, and for a short time they climb to observe the enemy and search for targets. It is felt that by using such actions the crews can

reduce the probability of their detection as well as lower the possibility of being hit by antiaircraft weapons. For the same purposes, the routes of flight if possible are chosen skirting the areas of troop combat operations. The given version is considered the most acceptable in searching for the enemy forward detachments and reserves being brought up.

The military leadership of the capitalist states and primarily the United States and their allies in the aggressive imperialist NATO bloc feels that in the system of acquiring information on the enemy, particularly over the battlefield and in the tactical depth of enemy defenses, helicopter air reconnaissance plays an important role which will grow in the future. Proceeding from this, it has given great attention to developing reconnaissance helicopters, to equipping them with the most modern devices and to improving crew tactics.

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NATO AIR FORCE FIGHTER BOMBERS DESCRIBED

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 6, Jun 83 (signed to press 16 Jun 83) pp 52-58

[Article by Engr-Col B. Ivanov: "Fighter Bombers of the NATO Air Forces"]

[Text] In carrying out extensive military preparations, the military leadership of the aggressive NATO bloc has given increased attention to developing tactical aviation and in particular its basic strike force, the fighter bombers. These are designed, judging from statements in the foreign press, to make nuclear strikes against the most important enemy installations, to seal off the area of combat operations, to provide direct air support for the ground forces and navy as well as for winning air supremacy by knocking out on the ground the enemy aviation equipment and airfield network to the entire depth of combat operations. Below data are given on the present state of the fleet of fighter bombers comprising the air forces of the NATO countries as well as certain ways of their improving in the next few years.

The U.S. Air Force is armed with two-seat fighter bombers of two types, the F-4 and F-111. The Western press has pointed out that these are the basic ones in NATO for carrying out missions of striking at a great depth in enemy territory and for isolating the area of combat operations. For increasing effectiveness in attacking strong targets, in the near future the aircraft are to be armed with GBU-15 guided glide bombs and the appropriate onboard equipment, in particular the Pave Tech system which ensures the employment of these bombs even under conditions of limited visibility. The American command has proposed supplying the Pave Tech cannister systems for about 150 F-4 and F-111 fighter bombers. In addition, the aircraft will be armed with new versions of the Maverick air-to-ground guided missiles, including those with a lazer homing system.

The F-4 Phantom is described as a supersonic, all-weather, long-range fighter bomber designed for attacking ground targets using conventional or nuclear weapons. As a carrier of nuclear weapons, this aircraft is being used more and more for alert duty in the Joint NATO Air Force. Over the 20 years of operation, the F-4 has been produced in more than 20 different versions and models, the most advanced of which is considered to be the F-4E (maximum take-off weight of 28,000 kg, maximum flight speed of 2,300 km per hour at an altitude of 11,000 m, a service ceiling of around 18,000 m and a range of 800 km).

On the eight external suspension points it can carry 7,250 kg of a payload. According to the Wild Weasel Program, 116 F-4E aircraft have been reequipped as assault aircraft or F-4G designed chiefly for the fire neutralization of enemy ground radio-emitting equipment.

The F-111 fighter bombers of the various versions have been produced from 1967 through 1976. According to a statement by American military specialists, due to the presence of an automatic terrain following system, the variable configuration wings and a powerful propulsion unit, the F-111 aircraft is capable at supersonic speeds (M=1.2) and at low altitudes (60-150 m) using the advanced EDM equipment and weapons of breaking through the air defense zone to an objective and hitting it with a sufficiently high degree of probability. In the U.S. Air Force there are four versions of the F-111, with the F-111F being considered the most advanced. It has improved TG30-P-10 bypass turbojet engines with a full afterburning thrust of 11,380 kg each and a modified bomb bay and also possesses increased survivability by installing a AN/ALQ-131 ECM radar and a AN/AAR-44 IR warning receiver. The maximum take-off weight of the aircraft is 45,360 kg, the maximum speed close to the ground is M=1.2 and at a high altitude M=2.5, the service ceiling is 18,000 m and the flight range with the internal fuel load is 4,700 km. In the bomb bay it can carry two nuclear bombs and on the six external suspension points under the wing a bomb load of up to 13,600 kg (Fig. 1) [not reproduced].

Judging from information in the foreign press, at present on the F-111E and F aircraft, the primary undercarriage struts and the canopy windscreen of the cockpit have been reinforced (to avoid damage from colliding with birds at low altitude flights), while a stalling prevention device has been incorporated in the control system. The work being carried out with a flight life of 6,000 hours for the airframe, in the estimate of American specialists, will make it possible to extend the operating life of the F-111 fighter bombers up to the beginning of the 1990's.

For satisfying the demands of the U.S. Air Force, for successfully carrying out the tasks of isolating the area of combat operations with the making of strikes at targets to a great depth of the enemy defenses, the American firm McDonnell Douglas on the basis of the F-15B two-seater fighter is developing an attack version of it called the Strike Eagle (Fig. 2) [not reproduced] and which in essence is a fighter bomber. The Western press has pointed out that these aircraft will complement the F-111 and subsequently replace them. Strike Eagle is equipped with two Fast Pack combined container tanks in order to carry an additional fuel load (4,500 kg) and electronic equipment. For operating at low altitudes, the aircraft structure is being reinforced, its maximum take-off weight will be 30,800 kg and the payload around 11,000 kg. Last year, the aircraft made test flights with different versions of weapons on the external suspension, in particular with four Durangal bomb clusters, three Maverick air-to-ground guided missiles, two air-to-air Sidewinder missiles as well as a cannon. The U.S. Air Force Command intends to begin purchasing aircraft which have been designated the F-15E from 1984, when the production lines will be freed for assembling the basic models of the F-15 Eagle fighter.

General Dynamnics, on the basis of the serially produced F-16A tactical fighter, has developed the F-16E fighter bomber with a delta wing (previously designated

the F-16XL) with a supersonic cruising speed (M=2.2). According to preliminary estimates of the firm's specialists, its range with a doubled payload carried on 17 underwing suspension points will be increased by 20 percent in comparison with the F-16A. At present, this aircraft is undergoing flight testing in the course of which, along with assessing the flight performance, practice missile launches and bombing will be carried out.

In addition to the above-described developments, the U.S. Air Force Command in the near future intends to evaluate the possibility of carrying out two parallel programs for developing a future FXX-B fighter bomber and the FXX-A air defense bomber with a modular design. The American firms Grumman and Rockwell International, in particular, are involved in the designing of the new fighter bombers. Grumman under a contract concluded with the Air Force is engaged in research in the area of developing a so-called advanced tactical strike fighter system. The foreign press has pointed out that the research covers a broad range of questions, including: the technical development of an aircraft with direct control of the lift and cross force and the broadened use of composition materials and advanced titanium alloys; the development of digital navigation systems and weapons control systems marked by flexibility in operational use; the development of smokeless and highly efficient engines; studying the configuration of an aircraft with a forward-swept wing and new methods of suspending and delivering weapons to the target, particularly at low altitudes.

The British Royal Air Force has the Harrier-GR.3, Jaquar-GR.1 and Tornado-GR.1 fighter bombers.

The Harrier-GR.3 aircraft with a vertical or short take-off and landing (Fig. 3) [not reproduced] has been in production since 1973. It is designed for direct air support for the ground forces. It has one vectored-thrust engine with a maximum thrust of 9,750 kg. Maximum take-off weight is 11,340 kg, maximum speed at low altitude is 1,180 km per hour and service ceiling is 15,200 m. On five external suspension points the aircraft can carry a paylod of up to 2,270 kg (in an overload version up to 3,630 kg). A typical payload is considered to be two suspension units with a 30-mm Aden cannon, three 1,000-pound bombs and two launchers with 68-mm unguided missiles (19 missiles in each).

In accord with the current programs for modernizing these aircraft, they plan to replace the analogue sight and navigation system with a digital one and the built-in ECM system with a suspended Sky Shadow. In the opinion of English specialists, major repairs on the Harrier-GR.3 must be carried out from 1987 onwards. Thus, there are plans to reinforce the leading wing edge, the air intakes, the fuselage nose and the windscreen and install an automatic device for dropping radar reflectors.

The Jaguar-GR.1 fighter bomber of an Anglo-French development and in service since 1973 is designed for attacking ground targets and direct air support for ground troops. It has been optimized for conducting operations at transonic speeds in being based at forward airfields, including dirt ones. The high-lift wing provides the possibility of a short take-off and landing (length of take-off run around 720 m and for landing run 470 m). In developing the aircraft, provision was made to minimize expenditures and shorten the time for technical servicing under flight conditions. According to a statement of foreign

specialists, the survivability of the aircraft is determined by the capability of extended flight at low altitudes, by the armoring of important fuel system elements and by the use of a bullet-proof windscreen and ECM equipment. In 1978-1980, all the fighter bombers were equipped with the new Adur-Mk104 engine which is marked by high economy in an extended low-altitude flight and by great brief afterburning thrust. For increasing combat effectiveness, the aircraft is being reequipped from an analogue sight-navigation system to a digital one having improved performance and a lazer target indicator is also being installed.

The Jaguar-GR.1 is armed with two Aden 30-mm cannons and on the one ventral and the two inner underwing pylons it is possible to suspend a payload weighing 1,130 kg each, and on the two outer underwing pylons 570 kg each (Fig. 4) [not reproduced]. Its basic performance is: maximum take-off weight of 15,700 kg, maximum ground-level speed of 1,350 km per hour, 1,700 km per hour at an altitude of 11,000 m, a combat range of 575 km (at low altitudes) and 815 km (with a flight along a high--low--high profile) without external tanks. As a total the Royal Air Force has been delivered 100 Jaguar aircraft.

The Tornado-GR.1 fighter bomber of joint Anglo-Italo-West German development is designed for attacking airfields and other major targets in the enemy rear, for sealing off the area of combat operations and for direct air support for the ground troops. In the Royal Air Force it is to replace the Vulcan and Bucaneer bombers. The Tornado is the first European aircraft with a variable-sweep wing which can be locked into positions of 25, 45 and 67°. Such a wing with its developed high-lift devices as well as the high thrust-to-weight ratio and the design of the propulsion unit provide a maximum flight speed of M=2.2 at an altitude of 11,000 m and 1,350 km per hour at ground level, good take-off and landing performance with the possibility of operating from limited runways (a take-off run of 500 m and a landing run in using reverse thrust of 460 m) as well as high maneuvering qualities with a relatively high maximum take-off weight (26,300 kg). In the process of developing the aircraft, particular attention has been given to its ability to carry out a combat mission at maximum low altitudes (up to 60 m) with high accuracy of hitting the ground targets under various meteorological conditions and at any time of the day.

For increasing reliability, the fighter bomber has been equipped with a remote electronic flight control system with back-up mechanical wiring. Its propulsion unit consists of two three-shaft bypass turbojet engines with reverse thrust. The air intakes are adjustable. Maximum thrust of each engine using the afterburner is 7,650 kg and without the afterburner 4,300 kg. In the aim of providing an extended flight at low altitude, the engine afterburner is designed for continuous operation for 35 minutes. The starting of the engines is independent from an onboard auxiliary power unit which with a low fuel consumption can operate continuously up to 4 hours, maintaining the aircraft during this time in a state ready to take off. The preflight preparations of the Tornado have been partially automated by using built-in monitoring and testing equipment. In the course of this, the flight plan recorded on tape is fed into the central computer. The weapons of the aircraft include two built-in 27-mm Mauser cannons and diverse suspended weapons carried on the nine external points (maximum payload of 7,250 kg).

The French Air Force is armed with the Mirage-3E, Mirage-5F and Jaguar-A fighter bombers and the Mirage-3E and Jaguar-A can carry nuclear weapons.

For the Mirage-3E (commissioned in 1964), the take-off weight is 13,700 kg, the maximum speed at 12,000 m is 2,350 km per hour and at ground level 1,390 km per hour, the service ceiling is 17,000 m and the combat range 1,200 km. It has a single turbojet engine with a maximum afterburning thrust of 6,200 kg. For operating against ground targets, the aircraft utilizes its two built-in 30-mm cannons (a unit of fire of 125 cartridges), bombs as well as unguided and guided missiles (maximum payload of 4,000 kg). According to announcements in the foreign press, at present they plan to modernize the radio electronic equipment of the fighter bombers, equipping them, in particular, with the new Agava radar and a lazer rangefinder-target indicator. In the opinion of French specialists, this will increase the combat effectiveness of the aircraft in attacking ground targets.

The Mirage-5F fighter bomber (Fig. 5) [not reproduced] has the same airframe and power unit as the Mirage-3E, but differs in its simplified radio electronic equipment, the increased (up to 7) number of weapon suspension points and simpler technical servicing. The low-pressure tires allow the possibility of operating the Mirage-5F from frontline dirt airfields. The armament includes two built-in 30-mm cannons, bombs, guided and unguided missiles. The combat range of the fighter bomber with a bomb load of 1,000 kg in a ground-level flight is 650 km.

The Jaguar-A aircraft of Anglo-French development has been serially produced since 1972. On the five outside suspension points it can carry diverse weapons including one AN-52 nuclear bomb with a power of 25 kilotons. A certain number of these aircraft has been equipped with a new inertial navigation system and a ATLIS-2 lazer illumination and automatic target tracking radar which provides for the employment of a guided weapon with a lazer homing system against ground targets.

In the middle of the 1980's, the French Air Force, judging from announcements in the foreign press, will begin receiving new two-seater Mirage-2000 fighter bombers capable of breaking through to a target at maximum-low altitudes using terrain following. It has also been announced that the aircraft will be able to carry a ASMR missile with a nuclear warhead.

The West German Air Force is armed with the F-104G Starfighter and F-4F Phantom fighter bombers; it has also begun to receive Tornado aircraft.

The F-104G Starfighter fire bomber in the recent past was the basic attack aircraft of the nation's Air Force. It has a maximum take-off weight of 13,000 kg, a maximum speed of 2,330 km per hour at an altitude of 11,000 m, a service ceiling of 17,700 m, a ferry flight range of 3,150 km and a maximum payload of 1,800 kg.

The F-4F Phantom fighter bomber (Fig. 6) [not reproduced] is a version of the F-4E aircraft which differs from it basically in the onboard equipment. The F-4F have been delivered to the FRG in 1973-1976. At present, the aircraft is

undergoing modernization to increase its effectiveness and keep it in service up to the end of the 1980's and the beginning of the 1990's. In particular, they have announced that they intend to equip the F-4F with devices and launchers providing for the employment of the Maverick guided missile with a TV guidance system as well as guided bombs.

The Tornado aircraft is designed for air interdiction, for attacking airfields and moving-up reserves and for neutralizing small mobile targets at any time of the day. For this, in addition to the standard NATO bombs of 500-1,000 pounds and the English BL-755 bomb cluster, the fighter bomber will carry the MW-1 bomb cluster armed with small-caliber warheads of various operating principles and purposes.

For operating against ground targets, the Italian Air Force has the G.91Y and F-104G Starfighter fighter bombers.

The G.91Y was produced by Italian industry from 1968 through 1973. Its maximum take-off weight is 8,700 kg, maximum ground-level speed is 1,100 km per hour, the range is around 750 km and the service ceiling is 12,500 m. It is armed with two built-in 30-mm cannons and on the four suspension points it is possible to carry a paylod of up to 1,800 kg (bombs and guided missiles).

In the second half of the 1980's, the G.91Y fighter bombers, as has been stated in the foreign press, are to be replaced by the light single-seat fighters being developed under the AMX program (maximum take-off weight of 12,000 kg, maximum payload of 3,800 kg, and range of around 340 km with a payload of 1,360 kg). The Italian Air Force plans to purchase 187 such aircraft, assigning them the tasks of direct air support for the ground forces and air interdiction. Since 1982, the new Tornado fighter bombers have begun to be delivered (Fig. 7, a total of 100 aircraft have been ordered) [not reproduced] and these are to replace the obsolete F-104G.

The Belgian Air Force is armed with the F-104G Starfighter and Mirage-5BA fighter bombers. At present, the F-104G are being replaced by new F-16 Fighting Falcon aircraft (maximum take-off weight of 14,970 kg, maximum speed of M=2.0 at an altitude of 12,000 m, service ceiling of 15,850 m, range of 925 km and maximum payload of 6,900 kg). The replacing of the Mirage-5BA, due to their technical wear, is to start in the middle of the 1980's. Here they are discussing two possible solutions: to replace them with new F-16 fighters and to purchase another 100 aircraft in addition to those previously ordered or to modernize the Mirage-5BA and acquire another 20 such aircraft.

The Danish Air Force has F-100D and F Super Saber (American development) and F-35 Draken (Swedish) fighter bombers. The Super Saber is considered obsolete and is presently being replaced with F-16 aircraft (a total of 58 aircraft have been purchased). After replacement, these will be returned to the United States for a major overhaul and then some of these are to be turned over to the Turkish Air Force, others will be broken down and the parts utilized for meeting the spare parts requirements as the aircraft is no longer produced.

The F-35 Draken aircraft (maximum take-off weight of 15,000 kg, maximum speed of 2,125 km per hour at an altitude of 11,000 m, service ceiling of 18,300 m,

range of 560-1,100 km and payload of 1,000 kg) at present are being modernized. They are receiving more advanced sight and navigation equipment which will include, in particular, a lazer rangefinder and target indicator.

The Dutch Air Force has two models of fighter bombers: the F-104G Starfighter and the NF-5A (maximum take-off weight of 9,380 kg, maximum speed of 1,480 km per hour at an altitude of 11,000 m, service ceiling of 15,400 m, range of 350-880 km and payload of 2,800 kg). These are being replaced by new F-16 aircraft (144 aircraft have been ordered from the United States).

For making strikes against ground and naval targets, the Norwegian Air Force uses the F-5A fighter bombers. These will gradually be replaced by the F-16 (72 have been ordered). For operating against naval targets the F-16 are to be armed with four Norwegian-developed Penguin-Mk3 antishipping missiles.

The Turkish Air Force is armed with the F-100 (of various models), F-5A, F-104G and F-4E fighter bombers. According to an announcement in the Western press, Turkey has begun to receive on easy terms F-104G aircraft being taken out of service in the Dutch, FRG, Danish and Norwegian air forces and is purchasing in the United States F-4E fighters (around 90 aircraft have already been received and another 15 are expected in the near future).

For attacking ground and sea targets as well as for direct air support of ground troops, the Greek Air Force has the F-104G and F-4E fighter bombers as well as the A-7 Corsair ground attack aircraft. Here the former which are considered obsolete are to be replaced by modern combat aircraft. According to evidence in the foreign press, seen as possible "candidates" are the American F-16 and F-18 aircraft, the French Mirage-2000 and the Tornado multipurpose tactical fighter of joint Anglo-Italo-West German development.

The Portuguese Air Force has only one type of fighter bomber, the G.91 (of Italian development, obsolete).

The Canadian Air Force possesses CF-5A and CF-104G fighter bombers and these, in the opinion of Canadian military specialists, no longer meet present-day requirements and for this reason will be replaced by the new multipurpose F-18 Hornet bombers which are to be purchased in the United States (138 aircraft have been ordered).

For direct air support for the ground troops and navy as well as for striking ground targets in the tactical depth, the Spanish Air Force employs F-5A fighter bombers. In the near future, there are plans to replace these with the F-18 fighters (84 aircraft have been purchased in the United States). The maximum take-off weight of the F-18 Hornet is around 23,000 kg, maximum high-altitude speed is 1,900 km per hour, the service ceiling is 15,240 m and the range is 740 km. Its armament includes a built-in 20-mm 6-barrel Vulcan cannon (a unit of fire of 570 cartridges), guided and unguided missiles and bombs located on nine external suspension points (maximum payload of 6,200 kg).

The state and development of the fighter bomber fleet show the unflagging attention on the part of the NATO military leadership to increasing the combat

might of tactical aviation as one of the most important means in conducting its aggressive policy and creating a tense situation in various regions of the world.

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U.S. PLANS TO ARM B-52 BOMBERS WITH ANTISHIPPING MISSILES EXAMINED

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 6, Jun 83 (signed to press 16 Jun 83) pp 59-62

[Article by Engr-Col V. Kirsanov: "The Use of the B-52 Strategic Bombers for Naval Purposes"]

[Text] The strategy of "direct confrontation" as announced by the Reagan Administration as the basis of U.S. military doctrine in the 1980's, envisages the possibility of conducting wars of differing scale and duration against the USSR and other socialist commonwealth nations employing both nuclear and just conventional weapons. The views of the American specialists on conducting conventional wars have been most fully expressed in the concept of "horizontal (geographic) escalation" and this presupposes the conducting of combat operations against the Soviet Union simultaneously in several areas and in land and ocean (naval) theaters of war. In the latter instance, judging from announcements in the Western press, in the interests of winning supremacy at sea the Pentagon intends to use not only its naval forces but also a portion of the strategic bombers.

The question of employing strategic aviation aircraft in the interests of the navy was first raised by the U.S. Naval Command back in the beginning of the 1970's. At that time, it was a question chiefly of having the B-52 bombers conduct reconnaissance and observation of the situation in remote areas of the ocean and sea theaters of war. From the middle of the last decade, the B-52 participated regularly in the weekly conducted naval exercises "Busy Observer" in the course of which ships were searched for in the Atlantic and Pacific and their activities were continuously tracked. As a rule, the duration of a flight by bombers which took off from Sawyer Air Base in Michigan was 15 hours and the ships were observed from great heights.

In the same years, American specialists proposed the idea of equipping these aircraft with various antishipping weapons for combating the enemy surface fleet. In 1975, the U.S. Air Force and Navy submitted to the leadership of the Defense Department a joint program for conducting 3-month testing for the combatibility of the Harpoon antishipping missile and the B-52 bomber. However, at that time the Pentagon did not approve the proposal for a number of reasons.

In recent years, the views of employing strategic aviation for naval purposes have undergone further development. In referring to the opinion of military specialists, the newspaper NAVY TIMES has stated that the B-52 can carry out the following main tasks: combating enemy surface ships, attacking its naval bases, providing air support for the navy in the course of conducting operations to win supremacy in the ocean theaters of war. It has been confirmed that the effectiveness of such operations is significantly higher if in addition to the B-52 bombers and combat vessels the E-3A AWACS aircraft are involved in them. The newspaper pointed out that the E-3A aircraft have already participated in a number of joint Air Force and Navy exercises conducted in the Atlantic and Caribbean. In the aim of reducing B-52 losses in attacking enemy naval bases, they are to be escorted by carrier-based aviation.

In addition, as before it is considered advisable to employ the strategic bombers for conducting air reconnaissance for naval purposes and in setting minefields.

The foreign press has emphasized that from the end of the 1970's and the beginning of the 1980's, the B-52 have participated in virtually all major exercises of the Joint Naval Armed Forces (Team Work-80, Solid Shield-81, Ocean Venture-82 and others) in the course of which they were employed for conducting reconnaissance in the interests of the American Navy. However, while previously these aircraft operated only in the Atlantic and Pacific, starting from 1980 they began to make regular long reconnaissance flights from Anderson Air Base on the Island of Guam into the Indian Ocean, the Arabian Sea and the Persian Gulf from whence direct access is gained to the rich oil areas of the Near and Middle East which have unceremoniously been declared by Washington as a zone of its "vitally important interests." Obviously, with good reason the UPI Agency distributed a very frank announcement that the reconnaissance flights in the Indian Ocean should demonstrate to the entire world the capabilities of the B-52 which when necessary could fly in here with missiles and bombs.

In increasing its military might in the given region of the world, the Pentagon has rebuilt the airfield on Diego Garcia Island and this will make it possible to turn it into a permanent SAC Air Base of the U.S. Air Force. The Western press has not concealed the fact that the United States is also trying to obtain the right to use airfields in Kenya, Somali, Oman and Thailand for stationing B-52. For this same purpose, in 1981, a bilateral agreement was concluded with Australia and in accord with this the strategic bombers will have the right to land at the Australian airfield in Darwin for refueling and crew rest. Their maintenance will be carried out by American technical personnel (around 100 men). It has been announced that in 1981, the given airfield was already being used by the B-52 bombers and the KC-135 tanker aircraft which participated in the joint exercises of the armed forces of the ANZUS bloc countries Kangaroo-81.

The use of B-52 for laying minefields is directly tied to the plans for winning and holding supremacy in the ocean and sea theaters of war. The implementation of these plans can be facilitated by the prompt mining of "certain key regions of the world ocean." The U.S. Navy Command puts in such regions primarily the

narrows and strait zones used by enemy ships for leaving inland waters for the purpose of deployment in the ocean theaters of war. The laying of mines in them can be done in the early stages of an exacerbation of the international situation in order, with the start of combat operations, to substantially restrict the freedom of enemy ship movements. In the opinion of the SAC Commander, Gen B. Davis, a B-52 bombers, as a minelayer, in terms of its capabilities, greatly surpasses any other American modern naval or air force aircraft. Considering what has been stated above, in the exercises of the NATO Joint Armed Forces of recent years (Team Work-80, Ocean Safari-81 and others), the questions of mining individual regions of the Atlantic using the B-52 aircraft have been regularly worked out.

At present, having returned to the idea of arming the B-52 with Harpoon missiles, the United States has already begun to carry out the appropriate practical measures. As has been announced by the magazine AVIATION WEEK AND SPACE TECHNOLOGY, Pentagon specialists have worked out a program for conducting integrated flight tests and from the results of these a conclusion will be drawn on the advisability of equipping the strategic bombers with the Harpoon antishipping missiles in the event of their subsequent use for combating surface vessels. The U.S. Congress has allocated 4.7 million dollars for the corresponding reequipping of two B-52G aircraft. A study of the onboard equipment and the particular features of its operation by the crews was planned for February 1983 and in March flight tests would be held (in the course of these, using modernized bombers they planned to launch three or four Harpoon practice missiles). Also planned was the participation in this measure of specialists from the Pacific Navy Testing Center at Point Mugu, California, with a close-to-real target situation to be set up at the range.

As has been emphasized in the foreign press, in the event of the successful concluding of the testing and the prompt allocating of the necessary money, the SAC units will begin receiving the first B-52G bombers reequipped for the Harpoon antishipping missiles in 1984. It has been announced that the Navy Command intends to have one heavy bomber air squadron on both the U.S. Pacific and Atlantic coasts and these will have 15 B-52G aircraft in each. These squadrons will become the 320th Heavy Bomber Air Squadron [hbas] at Mather Air Base, California, and the 2d hbas at Barksdale Air Base, Louisiana. It is planned that the E-3C AWACS aircraft which have undergone additional modernization will be used to carry out the tasks of target designation and guiding the strategic bombers to the sea targets. The E-3C aircraft are to be equipped with special receiving devices making it possible to obtain information from the over-the-horizon guidance system Outlaw Shark being developed for the Navy. One modernized E-3C aircraft will be used in the course of the testing being planned for 1983. As a total, as Pentagon representatives have stated, four E-3C aircraft will be deployed in the interests of the combat employment of the B-52G bombers with Harpoon missiles.

In assessing the capabilities of the B-52, American specialists feel that each of them can carry up to 12 antishipping missiles on underwing pylons. There is also the possibility of increasing their number by another eight units, however for this the aircraft must be equipped with a new universal revolver-type internal launcher the development of which started in 1981.

In referring to a statement by the chief of one of the agencies of the U.S. Navy Staff, Maj Gen Robert Ross, the magazine AVIATION WEEK AND SPACE TECHNOLOGY has written that in carrying out combat missions related to winning supremacy on ocean theaters of war, a B-52 bomber equipped with Harpoon missiles can reach patrol areas up to 3,700 km distant, patrol and search for targets in them for at least 2 hours and without refueling return to the home airfield.

It has also been announced that the patrol time can be greatly increased if the B-52 will be equipped with new, more economic engines. In this context one should note the information given by the magazine FLIGHT INTERNATIONAL which has stated that in 1981 Pratt and Whitney proposed to the Air Force Command that the B-52G bombers should carry four more powerful and more economic PW2037 engines instead of the eight J57-P-43 engines. In the estimates of the firm, as a result of such a change, the bomber's flight distance and payload could be significantly increased, average hourly fuel consumption would be reduced by 40 percent and its maintenance substantially simplified. Here the cost of the work of reequipping one bomber with the new engines would be around 24.4 million dollars.

The planned equipping of a portion of the SAC aircraft with the Harpoon antishipping missiles will make it possible for the Pentagon to more widely employ these strategic bombers for supporting not only the navy but also the notorious "Rapid Deployment Forces" which have been specially organized to carry out police functions in "defending U.S. interests in remote regions of the world." By the autumn of 1982, virtually a complete mutual understanding was reached on this question between the Navy and Air Force commands and this was expressed in the worked-out and signed corresponding agreement. The already commenced exchange of students between the higher Navy and Air Force military schools has been called by the newspaper AIR FORCE TIMES one of the first steps to carry out this agreement. Subsequently, the number of joint exercises and training is to be increased, the aircraft are to be improved and an additional batch of Harpoon missiles is to be purchased. All of this is still another obvious confirmation of the aggressiveness in the foreign policy course of the present U.S. Administration which is endeavoring by any means to achieve military supremacy over the USSR and by this create the basis for conducting a policy "from a position of strength."

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TRAINING, EQUIPMENT OF WEST GERMAN DEMOLITION DIVERS TRACED

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 6, Jun 83 (signed to press 16 Jun 83) pp 62-64

[Article by Capt 2d Rank (Res) V. Mosalev: "Demolition Divers of the West German Navy"]

[Text] In the opinion of NATO military specialists, the geographic and hydrological conditions of the Baltic and North Seas, and primarily their coastal areas, are favorable for the effective use of mines which in the event of their use by the enemy will substantially impede NATO naval operations.

Considering this factor, the West German Naval Command has given great importance to combating mines, having entrusted this to a fleet of minesweepers which number 59 ships and more than 2,000 men.

Among the fleet specialists, a comparatively numerous group is the demolition divers. They are found in the crews of the minesweepers as well as in a mine deactivating company stationed in the town of Eckernförde.

Judging from materials in the foreign press, the demolition diver team on each minesweeper consists of 6 men (an officer and 5 junior officers) and a mine deactivating company has 96 organized into 7 groups: command, supply, service, medical, demolition diver (2) and training. The personnel of the latter is part of the motorized shore mine deactivation teams and a portion of these is in constant combat readiness and can be immediately delivered to the necessary area by motor transport, by ship or by air. For supporting diving work, the company has been assigned two ships, Y849 "Stier" and Y806 "Hansa" which are reequipped minesweepers.

As has been emphasized in the West German press, the demolition divers carry out the following tasks: the search and destruction of naval mines in the open sea both independently and also with the minesweeping ships; deactivation, evacuation and destruction of unexploded ammunition and other explosive objects in coastal waters and on land; carrying out underwater demolition and repairs; supporting the testing of combat equipment and weapons of the navy and Bundeswehr as a whole. They also participate in emergency rescue and scientific research work conducted by various agencies. In wartime, in the opinion of foreign specialists, the demolition divers can be used to support landing operations and conducting sabotage in the enemy coastal rear areas.

The demolition divers are trained from volunteers who have undergone strict medical selection, as a result of which up to 50 percent of the applicants are eliminated. The training course is designed for 6 months: the first 2 are allocated to basic training in the damage control training group in Neustadt while the following 4 are spent in the basic and training group of the mine deactivation company in Eckernforde.

In the course of basic training the demolition divers study the principles of skindiving, the physiology and medical support of diving as well as actually learn about the breathing devices with an open breathing cycle and operating on compressed air.

In the process of basic training, chief attention is given to achieving a high level of physical preparedness of the trainees, to improving their endurance, to improving diving techniques using semi-self-contained breathing defices which use artificial breathing mixtures, to working on underwater dives in nontransparent waters of one of the ports and in the open sea in various regions of the Baltic and North Seas (4-6 weeks), to mastering underwater demolition work (2 weeks), to general troop and medical training and to the use of underwater transporting equipment and support vessels.

The students are under constant strict medical supervision and here they particularly monitor their nervous and mental state, the work of the heart and kidneys. In the event of the slightest deviations from the normal in their health, they are dropped out of the training group (up to 50 percent of the trainees).

Having completed the training, the graduates should be capable of working for an extended time under water at depths up to 60 m, know how to recognize various explosive objects, particularly naval mines, and deactivate them. They are given the title of demolition diver after which the best trained are sent to the mine deactivation company and the remainder to the ships of the minesweeping fleet.

In the process of further service in the mine deactivation company, the demolition divers continue to improve their professional skill by participating in numerous training drills and exercises and in deactivating explosive objects which have remained in the coastal waters and on shore since World War II. In addition, they are trained in operating underwater vehicles, motorboats, and launches, the mastering of various types of weapons, combat procedures, parachuting and radio operating.

The officer the junior officer personnel, in addition, can improve their skills in a demolition course (3 weeks), a course for detecting unexploded ammunition and deactivating it (15 weeks) and a mine locator course (2 weeks).

The demolition divers sent to the minesweepers, in the course of service, improve their skills in locating and destroying naval mines in the open sea.

The diving equipment of the demolition divers includes a breathing device of the open or semi-self-contained type, a faceplate, a drysuit, flippers, an

inflatable life vest, a depth gauge, a diving watch, compass, flashlight, knife, and a surface inflatable buoy which is connected to the diver by a lanyard and shows his position under water. When necessary he can be armed with a small-sized underwater radio for transmission and contact with other demolition divers and support forces as well as a manual sonar for locating underwater objects, primarily in the nontransparent zone.

In the opinion of NATO specialists, among the bloc members only in the West German Navy do the demolition divers have completely demagnatized and acoustically safe diving gear and this makes it possible for them to deactivate mines with different types of highly sensitive fuzes.

The demolition divers can be delivered to the necessary area by the diving support ship or by a minesweeper, airplane or helicopter as well as by motor transport. They travel directly to the point of the underwater work using inflatable boats with an outboard motor, in launches or underwater propulsion devices or by underwater towers.

The West German Navy Command gives great attention to maintaining the demolition divers in constant combat readiness and to supplying them with the most recent equipment. In addition, it coordinates the questions of their training and tactics of employment with the naval commands of the other NATO countries. The foreign press has pointed out that the West German Navy demolition divers constantly conduct joint drills and training with analogous specialists from the Dutch, Danish, British, French and Turkish navies and in the course of these they exchange experience, become acquainted with new gear and work out the tactics of joint actions.

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CONTROL OF RADIO FREQUENCY USE IN U.S. NAVY REVIEWED

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[Article by Capt 3d Rank B. Azarov, Capt 3d Rank A. Katarzhnov and Capt-Lt A. Stefanovich: "Controlling the Use of the Radio Frequency Spectrum in the U.S. Navy"]

[Text] The unrestrained increase in the arms race in the United States has been accompanied by the broad use of radio electronics for military purposes.

The constantly increasing amount of radio electronics equipment in the U.S. Navy used for radio communications, radar, radio navigation, radio telemetry and electronics countermeasures [ECM] with the limited width of the radio frequency spectrum has led to the necessity of working out means and methods for effectively controlling its use.

By the control of the radio spectrum, foreign specialists understand a group of organizational and technical measures making it possible to jointly utilize the spectrum by different radio electronic devices (REE) without the development of unintentional interference. For this it is essential to have special bodies, to work out the rules for the use of the radio spectrum and supervise their fulfillment and allocate the radio frequency spectrum among the navy organizations, services and forces.

With the joint operation of various REE, it is essential: to observe the international and national agreements on the use of the radio spectrum, to ensure an acceptable level of unintentional interference as well as deviations in the values of the basic REE equipment within the set limits.

In the U.S. Navy, the leading body in this area is NAVEMSCEN [Naval Electromagnetic Spectrum Center].

This allocates radio frequencies (on a zonal basis) between the navy organizations and services and they, in turn, plan the operation of the users in the assigned frequencies. A special dispatcher monitors the use of the radio spectrum in each zone, it maintains contact and interacts with the civilian radio frequency bodies (Fig. 1) [not reproduced].

The U.S. Navy Communications Command and the main and auxiliary communications centers directly providing ship-to-shore radio communications for the Navy allocate the assigned areas of the radio spectrum among the commands, the task forces and ships of the fleet (Fig. 2a) [not reproduced]. Foreign specialists have pointed out that here it is essential to consider the constantly changing position of the naval forces, their deployment plans, the changes in the conditions of radio wave propagation and the technical condition of the technical communications equipment. A schedule for the use of radio frequencies for a period of conducting various exercises and operations is compiled ahead of time. For providing the command with dependable and stable communications with subordinate forces under the conditions of a constantly changing situation, around-the-clock planning is carried out at the main and auxiliary communications centers.

The commanders of the operational fleets, the commanders of the task forces, groups and ships (Fig. 2b) [not reproduced] are responsible for planning the use of radio frequencies assigned for communications inside the task forces, between them as well as between the different naval forces. As has been announced in the foreign press, before the holding of major fleet exercises, such planning is carried out for several days, as here it is essential to consider all the forces involved in the exercise and draw up a schedule for radio frequency use in accord with the current demands and limitations. Here consideration is given to the tasks confronting the task force and also the capabilities of the radio communications equipment existing on the force's ships and aircraft.

The foreign press has stated that the previously existing methods of controlling radio spectrum use based on manual methods of processing and computing did not ensure optimum results. For this reason two systems were worked out for the U.S. Navy and these, as foreign specialists feel, significantly increase the effectiveness of joint REE operations under the conditions of a limited width of the radio frequency spectrum.

One of these is FOTACS (Fleet Operational Telecommunications Automated Control System). The four main communications centers and the operations center of the U.S. Navy Communications Command have been equipped with it. The adopting of the system by the U.S. Navy, in the opinion of American specialists, has significantly increased the command's capabilities in controlling the satellite and short wave communications equipment.

FOTACS carries out such tasks in controlling the Marisat and Fleetsatcom satellite communications systems as regulating the power of the radio transmitters, calculating the radio routes, assigning the communications channels, and recording and analyzing the data on their use. For short wave radio communications, it also calculates and assigns the frequencies, collects and analyzes information on their use. The system also provides for the collection, accumulation and analysis of data on the state of the radio communications equipment and their operating conditions and provides a visual display of information on the positions of the ship and their radio networks.

The other system for controlling the radio spectrum in the U.S. Navy is CPAS (Communication Plan Automations System). It has been set up in the fleets for

the following purposes: automating the processes of retrieving and storing data necessary in planning radio communications use for the period of conducting an exercise (operation); determining the capabilities of the radio communications equipment existing on the ships; comprising frequency schedules; carrying out calculations to reduce the unintentional interference level from radio communications equipment; working out and printing the communications appendix.

As has been stated in the foreign press, radio communications planning includes the working out of the organization of radio communications for the forces during the period of conducting the exercise (the first stage) and a list of the radio frequencies (the second stage, Fig. 3) [not reproduced].

In the first stage, a list is drawn up for all the radio networks which are to be operated in the exercise according to the operations order for the exercise and the communications manual. In addition, the minimum necessary number of frequencies is calculated and the emission bands, the power of the radio transmitters and their operating conditions are given. The zone's dispatcher, using these data, draws up orders for the use of the radio frequencies and establishes the band areas. In the second stage with the aid of the CPAS automated system, in accord with the algorithm for assigning radio frequencies which considers their reciprocal spacing and the level of the spurious harmonic radiation (up to the seventh), draws up an optimum radio frequency list.

From information in the foreign press, FOTACS and CPAS are widely employed for controlling radio spectrum use. Nevertheless, at present a U.S. Navy combined automated system of radio spectrum control is being developed and this will incorporate the two mentioned systems. It is assumed that this will be in use in the American Navy in the middle of the 1980's. The given system will make it possible to unite the tasks of current planning with long-range. In the opinion of Western specialists, due to this control over the use of the radio spectrum will become significantly more effective.

The new system envisages also the storage of plans for the employment of the naval forces with different situational models and in the event of necessity these can be brought up on the data display devices. The specialists have proposed increasing the effectiveness of the ship REE by optimizing their work with the forecasting of the state of the lower layers of the atmosphere and troposphere.

For this IREPS (Integrated Refractive Effects Prediction System) has been developed and this already is being used on seven aircraft carriers and one universal landing ship. It is designed to forecast and assess the influence of anomolous conditions for the propagation of radio waves as well as optical, infrared and lazer radiations on the operation of detection, reconnaissance, communications and ECM equipment and weapons. The data on the atmospheric and tropospheric parameters collected with the aid of radiosondes, aircraft and helicopter refraction meters and ship weather observation equipment at water level are sent to the system's computer. After their processing, profile charts are obtained which designate anomolous phenomena and forecasts for radiation absorption in a broad spectrum of frequencies. From these, the operator can choose the optimum frequencies and operating conditions for the REE. Similar systems are to be installed also on other U.S. Navy ships.

In the aim of ensuring electronic compatibility and countering unintentional interference, naval specialists are endeavoring to ensure the correct allocating of the operating frequencies for radars involved in detecting and tracking air targets as well as the semiactive radar guidance systems. Initially this was done manually but in 1972 a special program was worked out for analyzing the electromagnetic compatibility for the guidance systems of guided missiles called EMCAP (Electromagnetic Compabitility Analysis Program). It is designed for standard ship computers and makes it possible to quickly carry out the tasks of controlling the radio frequency spectrum, to reassign frequencies in order to reduce the level of unintentional radar interference.

The values of the operating frequencies of the ship radars are used as the input data for the calculations. The output data are the results of analyzing the used frequencies and a list of new ones making it possible to minimize the reciprocal radar interference and ensure their electromagnetic compatibility.

From announcements in the foreign press, as a result of automating the frequency assigning process and employing the EMCAP program, the time spent on calculating the optimum radar frequencies is 10 percent of what was needed with the manual method.

At present, for the ships in a task force, the following procedure has been provided for assigning radar frequencies. The commander of the force assigns an operator whose duties include collecting the frequency readings, the calculations for their reassigning and the distribution of the obtained results to all the ships in the force. For facilitating this process, a standard report form has been worked out for using the radar frequencies. These are received from all the ships in the force over the radio communications channels, they are fed into the computer and processed according to the EMCAP program. In the event that the calculated level of unintentional interference exceeds the acceptable, the computer sets new frequencies which ensure the electromagnetic compatibility of the ship radars.

Along with planning the use of the radio spectrum, great attention is also given to monitoring. According to information in the foreign press, the U.S. Navy has set up a special control service for the emissions of radio electronic equipment called ENCOM (Emission Control). Its tasks include ascertaining the actual load factor on the radio spectrum and determining the REE operating without permission or in violation of the existing requirements.

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U.S., ROYAL NAVY SONAR COMMUNICATIONS SYSTEMS EXAMINED

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[Article by Candidate of Technical Sciences Engr-Capt 1st Rank (Ret) A. Kir'yanchikov: "Hydroacoustic Communications for U.S. and British Navy Submarines"]

[Text] The military-political leadership of the United States and Great Britain, in their aggressive aspirations, put great hopes on nuclear missile and multipurpose submarines. However, in the opinion of the Western military specialists, their combat capabilities will be most fully and effectively used only with dependable communications.

Hydroacoustic communications, regardless of the shortcomings inherent to it, in particular the slow speed of acoustic wave propagation in water (1.5 km per second) and the transmission of information, possesses a significant advantage over radio communications, as its equipment is capable of providing communications with submarines at any dive depth.

U.S. Navy hydroacoustic communications equipment. At present, the basic sonar communications system for submarines and surface vessels is the AN/WQC-2, a modernized version of AN/BQA-2 sonar communications system. On submarines it can be used jointly with the AN/BQQ-2 and AN/BQQ-5 sonar installations and on surface vessels with the AN/SQS-26, AN/SQS-53 and other sets.

This makes it possible to provide secure underwater communications by the generating and emission of coded broad-band noise-like signals. The received messages are displayed on a CRT screen and recorded on the tape of the recorder. There is also the possibility of open communications by telephone and telegraph in the standard frequency band of underwater communications for the NATO countries.

For communicating with submerged submarines in their cooperation with aircraft, the U.S. Navy has worked out a special aviation radio sonar relay buoy, the AN/SSQ-71 (length 90 cm, diameter 15 cm, weight 15 kg).

Messages or individual signals from an aircraft are transmitted to the buoy over a radio channel in a frequency band of 163.75-166.75 megahertz and are then automatically relayed over a sonar channel to the submarine. Information from it to the airplane is processed in the reverse order.

The U.S. Navy Command has constantly paid attention to improving sonar communications. Thus, in the 1970's, the chief efforts were focused on developing a single automated long distance sonar communications system for submarines, surface vessels and aviation. In line with this research was carried out on the propagation of signals in the sea, special processors were developed and computer equipment and digital methods for forming and processing the signals as well as automation were incorporated in the sonar communications systems.

In 1978-1979, as a result of the work done on the basis of the modernized sonar automated system, the aviation improved design sonar buoys and specially developed equipment, a new integrated long-range sonar communications system was developed called IACS (Integrated Acoustic Communications System). This was designed for communications between submerged submarines as well as between them, surface vessels and aircraft in their joint operations.

The equipment of the system includes a control panel with a data display, a computer and a unit of electronic assemblies. It provides: automated control by integrating the signal processor with the set's control unit and equipment of the submarines; compensation for distortion caused by the multipathing of the acoustic signals; automatic detection and correcting of errors; the isolating of communications signals from various types of interference; correcting of the frequency dependence in the absorption of the energy of acoustic oscillations by the medium (sea water).

Sonar communications systems of the Royal Navy. The most advanced set for close underwater communications is the GI-732 (it has an integrated operating frequency of 8.0875 kilohertz with all the close communications sets of the NATO countries). It is capable of establishing telephone and telegraph communications. In a telephone mode, amplitude-modulated signals are sent on one side band with the suppression of the carrier frequency and in a telegraph mode, frequency modulated ones.

The GI-732 set provides automatic data transmission, it has scrambling and printing equipment, and is capable of transmitting information at a high speed (up to 66 words a minute) and automatically record the received messages. It can be used both on submarines and surface vessels.

At the beginning of the 1970's, testing was carried out on the 2008 sonar communications system with the 2009 scrambling device and the 2010 coding device. This was designed for communications between submarines with their cooperation and in the course of joint combat operations with surface vessels. It provides telephone and telegraph communications with manual and automatic transmission and recording of the received messages as well as teletype (scrambling of the transmitted information is provided). Using the 2010 device it provides methods of interference-proof coding (for the first time in sonar communications) and automatic error detection. Western specialists feel that this increases the range of communications.

According to data in the foreign press, the new set possesses a significant data transmission speed with high reliability. In testing in a real situation the error-free receiving of messages was 98 percent of the transmitted text with the worst conditions for sonar signal propagation. It has a modular design and

has been developed in several models and this facilitates its installing on submarines and surface vessels. The antenna of the simplest model of the set with a low output power consists of one sonar transducer while the most complicated includes several transducers and provides sending and receiving.

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